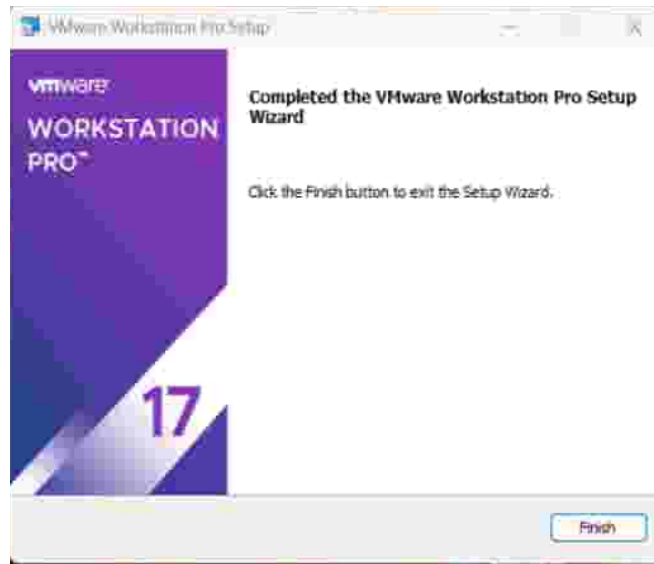


Practical no.: 1 Installation of RHEL 6.X





New Virtual Machine Wizard

Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:
Red Hat Enterprise Linux 6 64-bit

Location:
F:\New Folder\New folder Browse...

The default location can be changed at Edit > Preferences.

< Back Next > Cancel

New Virtual Machine Wizard

Specify Disk Capacity
How large do you want this disk to be?

The default location's hard disk is divided up into 100 MB sectors on the host. Depending on your host, these 100 MB sectors could be rounded down to 99 MB or rounded up to 101 MB, and left to your host's discretion.

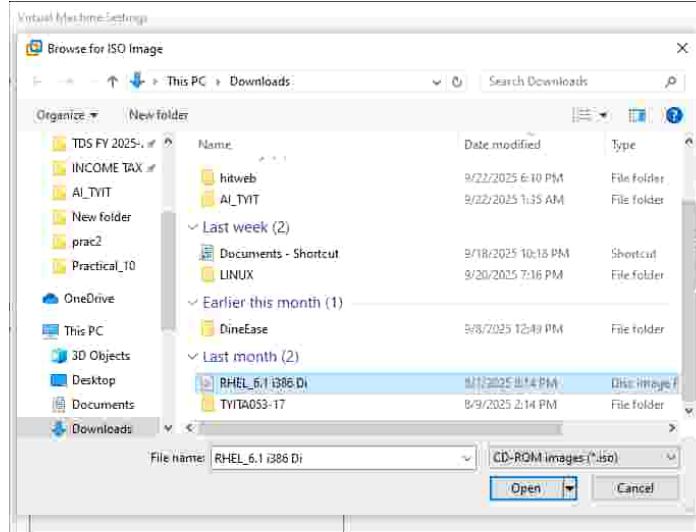
Maximum disk size (GB):

Recommended size for this new virtual disk (GB): 100 GB

☐ Create virtual disk as a single file
☒ Split virtual disk into multiple files

Splitting the new virtual disk into multiple files allows the virtual disk to grow in increments of 1 GB. For better performance with very large disks.

Help < Back Next > Cancel







Date and Time

These are the date and time for the system.

Date and time

Current date and time: Mon, 17-Sep-2023 12:12:46 PM EDT

[Sync system date and time with Internet](#)

Manually set the date and time of your system

Date

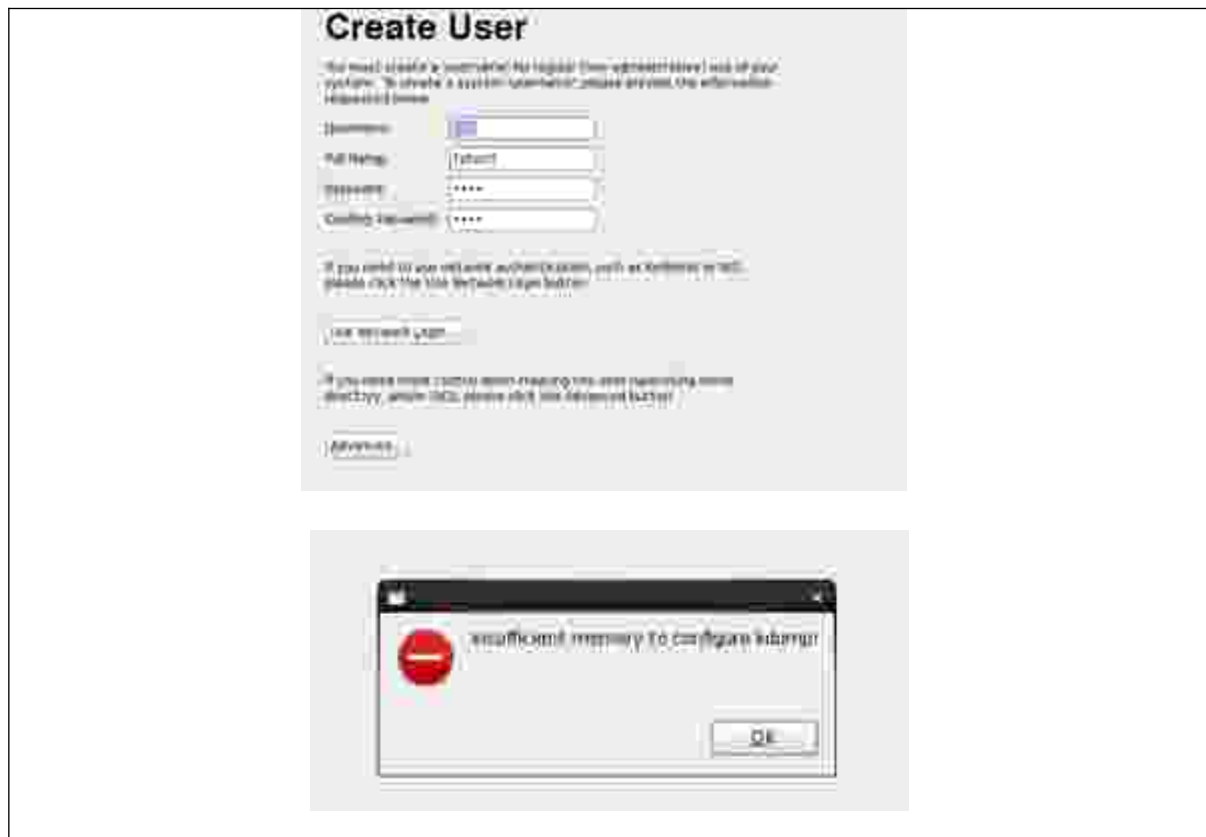


Time

Hour:

Minute:

Second:



Practical no.: 2 Graphical User Interface and Command Line Interface and Processes.




```

root@localhost:~# cat file1.txt
file1
file2

[root@localhost ~]# ls
mntfile
[root@localhost ~]# head mntfile
head: cannot open 'mntfile' for reading: No such file or directory
[root@localhost ~]# ls
mntfile
[root@localhost ~]# cat file1.txt
cat: file1.txt: No such file or directory
[root@localhost ~]# head file2.txt
head: cannot open 'file2.txt' for reading: No such file or directory
[root@localhost ~]# cat file1.txt
cat: file1.txt: Is a directory
[root@localhost ~]# ls
mntfile
[root@localhost ~]# cd file1.txt/
[root@localhost file1.txt]# cat
file1
file2
[root@localhost file1.txt]# head file1.txt
head: cannot open 'file1.txt' for reading: No such file or directory
[root@localhost file1.txt]# cp file1.txt
[root@localhost file1.txt]# cp file1.txt file2.txt

```

```

root@localhost:~# cat file1.txt
file1
file2

[root@localhost ~]# ls
mntfile
[root@localhost ~]# head mntfile
head: cannot open 'mntfile' for reading: No such file or directory
[root@localhost ~]# ls
mntfile
[root@localhost ~]# cat file1.txt
cat: file1.txt: Is a directory
[root@localhost ~]# ls
mntfile
[root@localhost ~]# cd file1.txt/
[root@localhost file1.txt]# cat
file1
file2
[root@localhost file1.txt]# head file1.txt
head: cannot open 'file1.txt' for reading: No such file or directory
[root@localhost file1.txt]# cp file1.txt
[root@localhost file1.txt]# cp file1.txt file2.txt

```

Practical no.: 2(c) Managing Processes

top 22:38:47 on 1409, 2 users, load average: 0.01, 0.01, 0.00
Tasks: 113 total, 1 running, 112 sleeping, 0 stopped, 0 zombie
Cpu(s): 2.7usr, 0.0sys, 0.0ni, 97.3id, 0.0wa, 0.0hi, 0.0st
Mem: 2063764k total, 35608k used, 1119008k free, 77048k buffers
Swap: 4191520k total, 0k used, 4191520k free, 85180k cached

PID	USER	PR	NI	VIRT	RES	SHR	%CPU	%MEM	TIME+	COMMAND
1790	root	20	0	1580	196	80%	5	2.8	0:15.22	top
2182	root	20	0	5552	752	332	0	0.0	0:02.17	lsdisk -sdm
30154	root	20	0	31808	116	9436	0	0.0	0:00.19	gnome-terminal
1	root	20	0	2852	1456	1296	0	0.0	0:01.55	init
2	root	20	0	0	0	0	0	0.0	0:00.01	kthreadd
3	root	RT	0	0	0	0	0	0.0	0:00.00	initcall
4	root	20	0	0	0	0	0	0.0	0:00.00	initcall
5	root	RT	0	0	0	0	0	0.0	0:00.00	initcall
6	root	RT	0	0	0	0	0	0.0	0:00.00	watchdog
7	root	20	0	0	0	0	0	0.0	0:00.02	events
8	root	20	0	0	0	0	0	0.0	0:00.00	cpuset
9	root	20	0	0	0	0	0	0.0	0:00.00	sd
10	root	20	0	0	0	0	0	0.0	0:00.00	sd
11	root	20	0	0	0	0	0	0.0	0:00.00	sd
12	root	20	0	0	0	0	0	0.0	0:00.00	sd
13	root	20	0	0	0	0	0	0.0	0:00.00	sd
14	root	20	0	0	0	0	0	0.0	0:00.00	sd

root@localhost:~# Desktop											
UID	Exp	Mem	Swap	MemM	MemS	MemT	STAT	STAT	TIME	COMMAND	
root	1	0.0	0.0	2832	1416	0	Ss	22:38	0:00	/sbin/init	
root	2	0.0	0.0	0	0	0	S	22:38	0:00	[kthreadd]	
root	3	0.0	0.0	0	0	0	S	22:38	0:00	[migration/0]	
root	4	0.0	0.0	0	0	0	S	22:38	0:00	[ksoftirqd/0]	
root	5	0.0	0.0	0	0	0	S	22:38	0:00	[kswapd0]	
root	6	0.0	0.0	0	0	0	S	22:38	0:00	[kworker/0]	
root	7	0.0	0.0	0	0	0	S	22:38	0:00	[events/0]	
root	8	0.0	0.0	0	0	0	S	22:38	0:00	[cpuset/]	
root	9	0.0	0.0	0	0	0	S	22:38	0:00	[khelper]	
root	10	0.0	0.0	0	0	0	S	22:38	0:00	[netns]	
root	11	0.0	0.0	0	0	0	S	22:38	0:00	[async/mgr]	
root	12	0.0	0.0	0	0	0	S	22:38	0:00	[pm]	
root	13	0.0	0.0	0	0	0	S	22:38	0:00	[sync_supers]	
root	14	0.0	0.0	0	0	0	S	22:38	0:00	[bdi-default]	
root	15	0.0	0.0	0	0	0	S	22:38	0:00	[kintegrityd]	
root	16	0.0	0.0	0	0	0	S	22:38	0:00	[kblockd]	
root	17	0.0	0.0	0	0	0	S	22:38	0:00	[kccpid]	
root	18	0.0	0.0	0	0	0	S	22:38	0:00	[kccpi_notify]	
root	19	0.0	0.0	0	0	0	S	22:38	0:00	[kccpi_hotplug]	
root	20	0.0	0.0	0	0	0	S	22:38	0:00	[ata/0]	
root	21	0.0	0.0	0	0	0	S	22:38	0:00	[ata_0x0]	
root	22	0.0	0.0	0	0	0	S	22:38	0:00	[ssmcmd_init]	

Practical no.: 3 Working with Users, Groups, and Permissions

1) Create a user information without home directory and id 1286

#useradd -M -u 1286 user1

#grp '^user1' : /etc/passwd

```
[root@server ~]# useradd -M -u 1245 user3
[root@server ~]# grep "user3:" /etc/passwd
user3:x:1245:1245::/home/user3:/bin/bash
```

2) Create a user with user id 9846 and group id 1689

#groupadd -g 1689 grque2

#useradd -u 9846 -g 1689 que2

```
[root@server ~]# groupadd -g 1688 group3
[root@server ~]# useradd -u 9845 -g 1688 user4
```

3) Remove tyit1 from project group

#gpasswd -d tyit1 project

```
Removing user tyit1 from group proj
[root@server ~]# groupadd -g 169 proj
[root@server ~]# useradd -u 1369 tyit
useradd: user 'tyit' already exists
[root@server ~]# useradd -u 1369 tyit4
[root@server ~]# usermod -aG project tyit4
[root@server ~]# gpasswd -d tyit4 proj
Removing user tyit4 from group proj
gpasswd: user 'tyit4' is not a member of 'proj'
[root@server ~]# usermod -aG proj tyit4
[root@server ~]# gpasswd -d tyit4 proj
Removing user tyit4 from group proj
[root@server ~]#
```

4) add user name :tyit using useradd command. Create a password for this user using passwd command

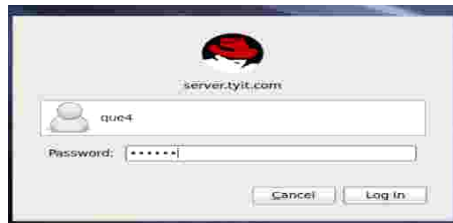
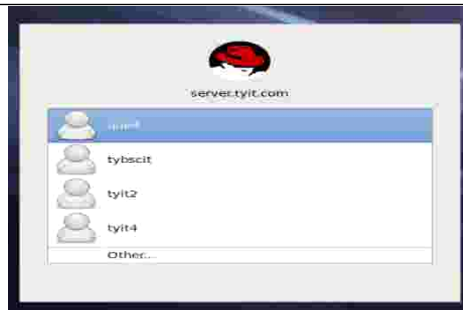
#useradd que4

#passwd que4

New password: que4pw

Retype: que4pw

```
Removing user tyit1 from group proj
[root@server ~]# useradd que4
[root@server ~]# passwd que4
Changing password for user que4.
New password:
BAD PASSWORD: it is based on a dictionary word
BAD PASSWORD: is too simple
Retype new password:
passwd: all authentication tokens updated successfully.
[root@server ~]#
```



5) Create 2 to 3 users. Examine home directory of each user

```
#useradd usr1
```

```
#passwd usr1
```

```
New password:usr1
```

```
Retype:usr1
```

```
#useradd usr2
```

```
#passwd usr2
```

```
New password:usr2
```

```
Retype:usr2
```

```
#useradd usr3
```

```
#passwd usr3
```

```
New password:usr3
```

```
Retype:usr3
```

```
#ls -ld /home/usr1 /home/usr2 /home/usr3
```

```
#ls -a /home/usr1
```

```
#ls -a /home/usr1
```

```
#ls -a /home/usr1
```

```
File Edit View Search Terminal Help
[que4@server ~]$ su
Password:
[root@server que4]# useradd usr1
[root@server que4]# passwd usr1
Changing password for user usr1.
New password:
BAD PASSWORD: it is too short
BAD PASSWORD: is too simple
Retype new password:
passwd: all authentication tokens updated successfully.
[root@server que4]# useradd usr2
[root@server que4]# passwd usr2
Changing password for user usr2.
New password:
BAD PASSWORD: it is too short
BAD PASSWORD: is too simple
Retype new password:
passwd: all authentication tokens updated successfully.
[root@server que4]# useradd usr3
[root@server que4]# passwd usr3
Changing password for user usr3.
New password:
BAD PASSWORD: it is too short
BAD PASSWORD: is too simple
Retype new password:
passwd: all authentication tokens updated successfully.
[root@server que4]# ls -ld /home/usr1 /home/usr2 /home/usr3
drwx----- 4 usr1 usr1 4096 Sep 23 22:39 /home/usr3
drwx----- 4 usr2 usr2 4096 Sep 23 22:39 /home/usr2
drwx----- 4 usr3 usr3 4096 Sep 23 22:40 /home/usr3
[root@server que4]# ls -a /home/usr1
ls: cannot access /home/user1: No such file or directory
[root@server que4]# ls -a /home/usr1
. .bash_logout .bash_profile .bashrc .gnome2 .mozilla
[root@server que4]# ls -a /home/usr2
. .bash_logout .bash_profile .bashrc .gnome2 .mozilla
[root@server que4]# ls -a /home/usr3
. .bash_logout .bash_profile .bashrc .gnome2 .mozilla
[root@server que4]#
```

6)Examine /etc/passwd /etc/groups /etc/shadow file with repositories

#grep '^tyit' /etc/shadow

#grep '^tyit' /etc/group

#grep '^tyit' /etc/passwd

```
[root@server que4]# grep '^tyit' /etc/shadow
tyit:$6$Y10dCW50JPN6agEBSlfjGBAKCYzWhKTYbodw.1fcduVBVy.4fwmpQJcMBqYa3ZW91RnIEQ45Pm2kLA03T7gJYG6.mwvIpI3y8JnMFy0:20354:0:99999:7:::
tyit1:!!:20354:0:99999:7:::
tyit2:!!:20354:0:99999:7:::
tyit4:!!:20354:0:99999:7:::
[root@server que4]# grep '^tyit' /etc/groups
grep: /etc/groups: No such file or directory
[root@server que4]# grep '^tyit' /etc/group
tyit:x:500:
tyit1:x:501:
tyit4:x:1309:
[root@server que4]# grep '^tyit' /etc/passwd
tyit:x:500:500:tybscit:/home/tyit:/bin/bash
tyit1:x:125:501:/home/tyit1:/bin/bash
tyit2:x:1269:124:/home/tyit2:/bin/bash
tyit4:x:1309:1309:/home/tyit4:/bin/bash
[root@server que4]#
```

7)Create two groups manager, staff add user in this group3

#groupadd manager

#groupadd staff

#useradd que7

#usermod -oG manager,staff que7

```
[root@server que4]# groupadd manager
[root@server que4]# groupadd staff
[root@server que4]# useradd que7
[root@server que4]# usermod -oG manager,staff que7
[root@server que4]# grep '^que7' /etc/group
que7:x:1376:
[root@server que4]# grep '^manager' /etc/group
manager:x:1374:que7
[root@server que4]# grep '^staff' /etc/group
staff:x:1375:que7
[root@server que4]#
```

8)login using root account with userdel command delete any two users.Use various options of userdel

#userdel tyit2

#userdel -r tyit1

#userdel -r -f tyit4

```
5001:!!:1376:0:que7
[root@server que4]# userdel tyit2
[root@server que4]# userdel -r tyit1
[root@server que4]# userdel -r -f tyit4
[root@server que4]# grep '^tyit' /etc/passwd
tyit:x:500:500:tybscit:/home/tyit:/bin/bash
[root@server que4]#
```

9)Create directories and sub directories and pass permission

#mkdir perm

#cd perm

touch f1 f2 f3

#chmod 4 fl

#ls -l

#chmod 2 f2

```
#ls -l
#chmod 6 f2
#ls -l
#chmod -R 777 f3
#ls -l
```

```

[que4@server ~]$ mkdir perm
[que4@server ~]$ cd perm
[que4@server perm]$ touch f1 f2 f3
[que4@server perm]$ chmod 6 f1
[que4@server perm]$ ls -l
total 0
-rw-r--r-- 1 root root 0 Sep 23 23:55 f1
-rw-r--r-- 1 root root 0 Sep 23 23:55 f2
-rw-r--r-- 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$ chmod 4 f1
[que4@server perm]$ ls -l
total 0
-rw-r--r-- 1 root root 0 Sep 23 23:55 f1
-rw-r--r-- 1 root root 0 Sep 23 23:55 f2
-rw-r--r-- 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$ chmod 2 f1
[que4@server perm]$ ls -l
total 0
-rw-r--r-- 1 root root 0 Sep 23 23:55 f1
-rw-r--r-- 1 root root 0 Sep 23 23:55 f2
-rw-r--r-- 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$ chmod 9 f1
chmod: invalid mode: '9'
Try 'chmod --help' for more information.
[que4@server perm]$ chmod 6 f2
[que4@server perm]$ ls -l
total 0
-rw-r--r-- 1 root root 0 Sep 23 23:55 f1
-rw-r--r-- 1 root root 0 Sep 23 23:55 f2
-rw-r--r-- 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$ chmod 777 f3
[que4@server perm]$ ls -l
total 0
-rw-r--r-- 1 root root 0 Sep 23 23:55 f1
-rw-r--r-- 1 root root 0 Sep 23 23:55 f2
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$ chmod -R 777 f3
[que4@server perm]$ ls -l
total 0
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f1
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f2
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$

```

```

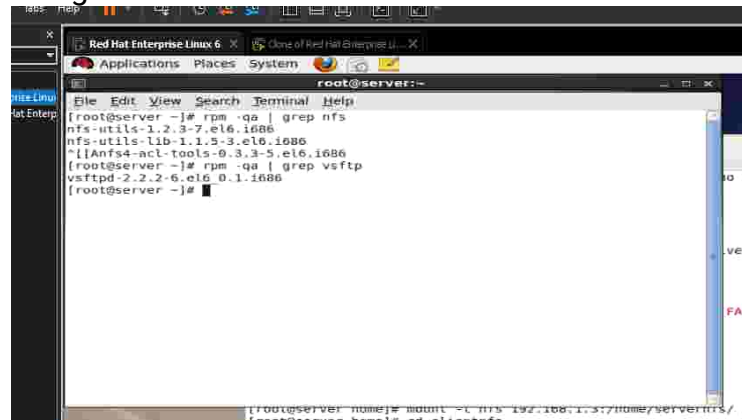
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f1
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f2
-rwxrwxrwx 1 root root 0 Sep 23 23:55 f3
[que4@server perm]$

```

Practical no.: 4 Working with RPM Storage and Networking

Practical no.: 4(a) Using Query Options

(1) Verify the package of NFS whether installed as shown below:



A terminal window on a Red Hat Enterprise Linux 6 system. The user is root at a server. They run the command `rpm -qa | grep nfs` and the output shows `nfs-utils-1.2.3-7.el6.i686` and `nfs-utils-lib-1.1.3-3.el6.i686`. Then they run `rpm -qa | grep vsftpd` and the output shows `vsftpd-2.2.2-6.el6.0.1.i686`.

```
root@server:~# rpm -qa | grep nfs
nfs-utils-1.2.3-7.el6.i686
nfs-utils-lib-1.1.3-3.el6.i686
root@server:~# rpm -qa | grep vsftpd
vsftpd-2.2.2-6.el6.0.1.i686
root@server:~#
```

(2) If not installed on your system, then execute the following command:



A terminal window showing the output of a command. It states that the package `nfs-utils-1:1.2.2-7.el6.i686` is already installed and the package `nfs4-acl-tools-0.3.3-5.el6.i686` is already installed. The prompt is `[root@localhost Packages]#`.

```
package nfs-utils-1:1.2.2-7.el6.i686 is already installed
package nfs4-acl-tools-0.3.3-5.el6.i686 is already installed
[root@localhost Packages]#
```

(3) Verify IP address of the linux machine to be setup as NFS Server:



A terminal window showing the output of a command. It displays the IP address `192.168.1.3` and the hostname `server`. The prompt is `[root@server ~]#`.

```
192.168.1.3
server
[root@server ~]#
```

(4) Make a directory to be exported, create few files into it and give it full permission, as follows



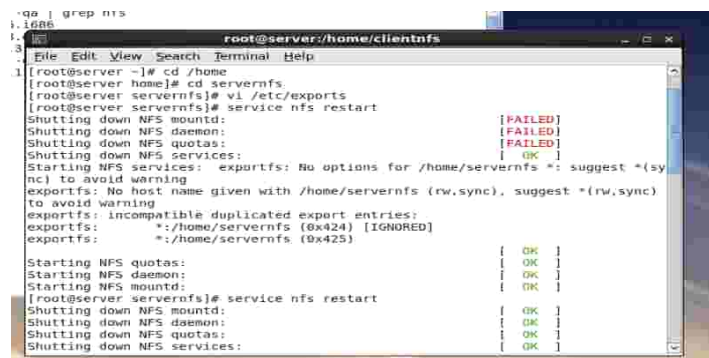
(5) Open the configuration file of NFS, i.e, /etc/exports and write the following lines under it:

[root@diamond ~] # vi /etc/exports.

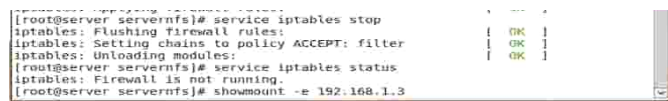


The above entry says that server export directory has been exported to the network 192.168.1.3

(6) Save and quit the file. Restart the service of nfs and enable it from boot as shown below :



(7) Stop the Firewalls and check the status whether it is stopped.



(8) Showmount command shows you all shared directories in given IP address.(Server)

```
[root@server servernfs]# ifup eth0
Active connection state: activated
Active connection path: /org/freedesktop/NetworkManager/ActiveConnection/0
[root@server servernfs]# showmount -e 192.168.1.3
Export list for 192.168.1.3:
/home/servernfs *
```

(9) Stop the ftp service - vsftpd services and NFS services clash with each other

(10) Give full permissions to the shared folder

```
[root@server servernfs]# service vsftpd stop
Shutting down vsftpd: [FAILED]
[root@server servernfs]# service vsftpd status
vsftpd is stopped
[root@server servernfs]# chmod -R 777 /home/servernfs/
```

NFS Client:

As NFS Client make a directory /nfsclient and mount the server exported directory on it, as shown:

```
[root@server servernfs]# cd /home
[root@server home]# ls
gr1  tyit
[root@server home]# mkdir clientnfs
[root@server home]# mount -t nfs 192.168.1.3:/home/servernfs/ /home/clientnfs/
```

On listing, it show up the content of server export directory.

```
[root@server home]# cd clientnfs
[root@server clientnfs]# ls
newFile
[root@server clientnfs]#
```

Practical 5 (c) Configure FTP

```
root@localhost:~
File Edit View Search Terminal Help
collisions:0 txqueuelen:0
RX bytes:720 (720.0 b) TX bytes:720 (720.0 b)

[root@localhost ~]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:FB:0C:4B
          inet addr:192.168.1.3  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fefb:c4b/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:140 errors:0 dropped:0 overruns:0 frame:0
          TX packets:70 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:14109 (13.7 KiB) TX bytes:9350 (9.1 KiB)
          Interrupt:19 Base address:0x2000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:12 errors:0 dropped:0 overruns:0 frame:0
          TX packets:12 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:720 (720.0 b) TX bytes:720 (720.0 b)

[root@localhost ~]#
```

```
System
root@localhost/var/ftp/pub
File Edit View Search Terminal Help
root@localhost ~# chkconfig vsftpd on
root@localhost ~# chkconfig --list | grep ftp
vsftpd 0:off 1:off 2:on 3:on 4:on 5:on 6:off
root@localhost ~# cd /media/DELL_D_1X_1386V_Disc_1/Packages
root@localhost ~# cd /var/ftp/pub/
root@localhost pub# cat ftpfile
!!!... testing ftp file
root@localhost pub# ifconfig
eth0
    Link encap:Ethernet HWaddr 08:0C:29:FD:0C:4B
    inet addr:192.168.1.1 Bcast:192.168.1.255 Mask:255.255.255.0
    inet6 addr: fe80::20c:29ff:fe7b:c4b/64 Scope:Link
    UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
    RX packets:438 errors:0 dropped:0 overruns:0 frame:0
    TX packets:89 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:1000
    RX bytes:32943 (32.1 KiB) TX bytes:11042 (10.7 KiB)
    Interrupt:19 Base address:0x2000

lo
    Link encap:Local Loopback
    inet addr:127.0.0.1 Mask:255.0.0.0
    inet6 addr: ::1/128 Scope:Host
    UP LOOPBACK RUNNING MTU:65536 Metric:1
    RX packets:15 errors:0 dropped:0 overruns:0 frame:0
    TX packets:15 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:984 (984.0 b) TX bytes:984 (984.0 b)

root@localhost pub# ifconfig eth0 192.168.1.1 netmask 255.255.255.0 up:
eth0
    Link encap:Ethernet HWaddr 08:0C:29:FD:0C:4B
    inet addr:192.168.1.1 Bcast:192.168.1.255 Mask:255.255.255.0
    inet6 addr: fe80::20c:29ff:fe7b:c4b/64 Scope:Link
    UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
    RX packets:469 errors:0 dropped:0 overruns:0 frame:0
    TX packets:15 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:1000
    RX bytes:32408 (30.5 KiB) TX bytes:14041 (13.7 KiB)
```

```
root@localhost/var/ftp/pub
File Edit View Search Terminal Help
RX bytes:32408 (30.5 KiB) TX bytes:14041 (13.7 KiB)
Interrupt:19 Base address:0x2000

lo
    Link encap:Local Loopback
    inet addr:127.0.0.1 Mask:255.0.0.0
    inet6 addr: ::1/128 Scope:Host
    UP LOOPBACK RUNNING MTU:65536 Metric:1
    RX packets:15 errors:0 dropped:0 overruns:0 frame:0
    TX packets:15 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:984 (984.0 b) TX bytes:984 (984.0 b)

root@localhost pub# gedit /etc/vsftpd/vsftpd.conf
root@localhost pub# service vsftpd start
Starting vsftpd for vsftpd: [FAILED]
root@localhost pub# service vsftpd start
Starting vsftpd for vsftpd: [FAILED]
root@localhost pub# service vsftpd restart
Shutting down vsftpd: [ OK ]
Starting vsftpd for vsftpd: [ OK ]
root@localhost pub# service vsftpd status
vsftpd (pid 2044) is running...
root@localhost pub# service vsftpd restart
Shutting down vsftpd: [ OK ]
Starting vsftpd for vsftpd: [ OK ]
root@localhost pub# cd
root@localhost ~# ftp 192.168.1.1
Connected to 192.168.1.1 (192.168.1.1).
220 (vsFTPd 2.2.2)
Name (192.168.1.1:root): anonymous
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> ls -l
227 Entering Passive Mode (192,168,1,1,23,59).
```

```
root@localhost/var/ftp/pub
File Edit View Search Terminal Help
Using binary mode to transfer files.
ftp> ls -l
227 Entering Passive Mode (192,168,1,1,23,59).
150 Here comes the directory listing.
drwxr-xr-x  3 0 0 4096 Sep 23 13:17 .
drwxr-xr-x  3 0 0 4096 Sep 23 13:17 ..
drwxr-xr-x  2 0 0 4096 Sep 23 13:19 pub
226 Directory send OK.
ftp> bye
221 Goodbye.
root@localhost ~# getsebool -a | grep ftp
allow_ftpd_anon_write --> off
allow_ftpd_full_access --> off
allow_ftpd_use_cifs --> off
allow_ftpd_use_ftp --> off
allow_ftpd_use_ntfs --> off
ftp_home_dir --> off
ftpd_connect_db --> off
httpd_enable_ftp_server --> off
vsftpd_anon_write --> off
vsftpd_enable_homedirs --> off
vsftpd_full_access --> off
vsftpd_write_ssh_home --> off
ftpd_anon_write --> off
root@localhost ~# setsebool -P allow_ftpd_anon_write
root@localhost ~# getsebool -a | grep ftp
allow_ftpd_anon_write --> on
allow_ftpd_full_access --> off
allow_ftpd_use_cifs --> off
allow_ftpd_use_ftp --> off
allow_ftpd_use_ntfs --> off
ftp_home_dir --> on
ftp_connect_db --> off
httpd_enable_ftp_server --> off
vsftpd_anon_write --> on
vsftpd_enable_homedirs --> off
vsftpd_full_access --> off
vsftpd_write_ssh_home --> off
```

```
root@localhost/var/ftp/pub
File Edit View Search Terminal Help
[root@localhost ~]# setsebool -P allow_ftpd_anon_write=1
[root@localhost ~]# setsebool -P ftp_home_dir on
[root@localhost ~]# getsebool -a | grep ftp
allow_ftpd_anon_write --> on
allow_ftpd_full_access --> off
allow_ftpd_use_cifs --> off
allow_ftpd_use_nfs --> off
ftp_home_dir --> on
ftpd_connect_db --> off
httpd_enable_ftp_server --> off
sftpd_anon_write --> off
sftpd_enable_homedirs --> off
sftpd_full_access --> off
sftpd_write_ssh_home --> off
tftp_anon_write --> off
[root@localhost ~]# ls -ldZ /var/ftp/pub/
drwxr-xr-x. root root system u:object_r:public_content_t:s0 /var/ftp/pub/
[root@localhost ~]# chown ftp /var/ftp/pub/
[root@localhost ~]# chgrp ftp /var/ftp/pub/
chgrp: missing operand after '/var/ftp/pub/'
Try 'chgrp --help' for more information.
[root@localhost ~]# chgrp ftp /var/ftp/pub/
[root@localhost ~]# ls -ldZ /var/ftp/pub/
drwxr-xr-x. ftp ftp system u:object_r:public_content_t:s0 /var/ftp/pub/
[root@localhost ~]# cd /var/ftp/pub/
[root@localhost pub]# touch T1 T2 T3
[root@localhost pub]# cat>ftpptest
welcome to ftp server
[root@localhost pub]# cd /var/ftp/pub/
[root@localhost pub]# pwd
/var/ftp/pub
[root@localhost pub]# touch T1 T2 T3
[root@localhost pub]# cat>ftpfile.txt
hi... this is ftp testing 22222222
[root@localhost pub]# ls
ftpfile ftpfile.txt ftpptest T1 T2 T3
[root@localhost pub]# service vsftpd restart
```

```
Home LINUX 2025
Applications Places System
user_list (/etc/vsftpd) - gedit
File Edit View Search Tools Documents Help
Open Save Undo
user_list
# vsftpd userlist
# If userlist_deny=NO, only allow users in this file
# If userlist_deny=YES (default), never allow users in th
# do not even prompt for a password.
# Note that the default vsftpd pam config also checks /et
# for users that are denied.
root
bin
daemon
adm
lp
sync
shutdown
halt
mail
news
uucp
operator
games
nobody
manish|

Plain Text Tab Width: 8 Ln
257 "/home/manish"
ftp> ls
227 Entering Passive Mode (192,168,
150 Here comes the directory listin
226 Directory send OK.
ftp> gedit /etc/
Display all 243 possibilities? (y o
ftp> 221 Goodbye.
[root@localhost pub]# gedit /etc/vu
```

```
Applications Places System
vsftpd.conf (/etc/vsftpd) - gedit
File Edit View Search Tools Documents Help
Open Save Undo
vsftpd.conf
# Uncomment this to enable any form of FTP write command.
write_enable=YES
#
# Default umask for local users is 022. You may wish to change this to 027,
# if your users expect that (022 is used by most other ftpd's)
local_umask=022
#
# Uncomment this to allow the anonymous FTP user to upload files. This only
# has an effect if the above global write_enable is activated. Also, you will
# obviously need to create a directory writable by the FTP user.
anon_upload_enable=NO
#
# Uncomment this if you want the anonymous FTP user to be able to create
# new directories.
anon_mkdir_write_enable=YES
#
# Activate directory messages - messages given to remote users when they
# go into a certain directory.
dirmessage_enable=YES
#
# Activate logging of uploads/downloads.
xferlog_enable=YES

Plain Text Tab Width: 8 Ln 27, Col 22 INS
ftp> ls
227 Entering Passive Mode (192,168,1,1,22,251)
```



```
root@localhost:~#
File Edit View Search Terminal Help
nl.. the 1st ftp testing 22222222
[root@localhost pub]# ls
ftpfile  ftpfile.lst  ftpfile  11  12  13
[root@localhost pub]# service vsftpd restart
Shutting down vsftpd:
Starting vsftpd for vsftpd:
[root@localhost pub]# chkconfig vsftpd on
[root@localhost pub]# chkconfig --list | grep vsftpd
vsftpd      0:off    1:off    2:on    3:on    4:on    5:on    6:off
[root@localhost pub]# chkconfig --list | grep ftp
vsftpd      0:off    1:off    2:on    3:on    4:on    5:on    6:off
[root@localhost pub]# cd /media/MSF1_0.1\ 1366\ misc\ 1/packages
[root@localhost packages]# ftp 192.168.1.1
Connected to 192.168.1.1 (192.168.1.1).
220 (vsFTPd 2.2.2)
Name (192.168.1.1:root): ftp
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> 221 Goodbye.
[root@localhost packages]# gedit /etc/vsftpd/vsftpd.conf
[root@localhost packages]# service vsftpd restart
Shutting down vsftpd:
Starting vsftpd for vsftpd:
[root@localhost packages]# ftp 192.168.1.1
Connected to 192.168.1.1 (192.168.1.1).
220 (vsFTPd 2.2.2)
Name (192.168.1.1:root): anonymous
331 Please specify the password.
Password:
530 Login incorrect.
Login failed.
ftp> 221 Goodbye.
```

```
root@localhost:~#
File Edit View Search Terminal Help
ftp> 221 Goodbye.
[root@localhost packages]# ^C
bash: cd: /pub: No such file or directory
[root@localhost packages]# cd
[root@localhost ~]# cd /var/ftp/pub
[root@localhost pub]# passwd manish
Changing password for user manish.
New password:
BAD PASSWORD: it is based on a dictionary word
BAD PASSWORD: is too simple
Re-type new password:
passwd: all authentication tokens updated successfully.
[root@localhost pub]# useradd shreyash
[root@localhost pub]# passwd shreyash
Changing password for user shreyash.
New password:
BAD PASSWORD: it is based on a dictionary word
Re-type new password:
passwd: all authentication tokens updated successfully.
[root@localhost pub]# ftp>pwd
[root@localhost pub]# ftp>ls
[root@localhost pub]# ftp>ls
[root@localhost pub]# ftp>ls
[root@localhost pub]# ftp 192.168.1.1
Connected to 192.168.1.1 (192.168.1.1).
220 (vsFTPd 2.2.2)
Name (192.168.1.1:root): anonymous
331 Please specify the password.
Password:
530 Login incorrect.
Login failed.
ftp> pwd
530 Please login with USER and PASS.
ftp> ls
530 Please login with USER and PASS.
Passive mode refused.
```

```
root@localhost:~#
File Edit View Search Terminal Help
Passive mode refused.
ftp> bye
221 Goodbye.
[root@localhost pub]# ftp 192.168.1.1
Connected to 192.168.1.1 (192.168.1.1).
220 (vsFTPd 2.2.2)
Name (192.168.1.1:root): manish
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> pwd
257 "/home/manish"
ftp> ls
227 Entering Passive Mode (192,168,1,1,147,10).
150 Here comes the directory listing.
226 Directory send OK.
ftp> gedit /etc/
Display all 243 possibilities? (y or n)
ftp> 221 Goodbye.
[root@localhost pub]# gedit /etc/vsftpd/user_list
[root@localhost pub]# service vsftpd restart
Shutting down vsftpd:
Starting vsftpd for vsftpd:
[root@localhost pub]# ftp 192.168.1.1
Connected to 192.168.1.1 (192.168.1.1).
220 (vsFTPd 2.2.2)
Name (192.168.1.1:root): manish
530 Permission denied.
Login failed.
ftp> 221 Goodbye.
[root@localhost pub]# cd /home/shreyash
[root@localhost shreyash]# pwd
/home/shreyash
[root@localhost shreyash]# cat>test.txt
hihi created by shreyash
```

```
root@localhost:~  
File Edit View Search Terminal Help  
hiiii created by shreyash  
[root@localhost shreyash]# ls  
test.txt  
[root@localhost shreyash]# cat>ftpfile.txt  
hello ftp server - shrey  
[root@localhost shreyash]# ls  
ftpfile.txt test.txt  
[root@localhost shreyash]# cd  
[root@localhost ~]# cat> FTP Test.txt  
file tranfer from current dir to ftp server  
[root@localhost ~]# pwd  
/root  
[root@localhost ~]# ls  
anaconda-ks.cfg Downloads install.log.syslog Public  
Desktop FTP Test.txt Music Templates  
Documents install.log Pictures Videos  
[root@localhost ~]# ftp 192.168.1.1  
Connected to 192.168.1.1 (192.168.1.1).  
220 (vsFTPd 2.2.2)  
Name (192.168.1.1:root): shreyash  
331 please specify the password.  
Password:  
230 Login successful.  
Remote system type is UNIX.  
Using binary mode to transfer files.  
ftp> get test.txt  
local: test.txt remote: test.txt  
227 Entering Passive Mode (192,168,1,1,171,108).  
150 Opening BINARY mode data connection for test.txt (25 bytes).  
226 Transfer complete.  
25 bytes received in 3.3e-05 secs (757.58 Kbytes/sec)  
ftp> ls  
227 Entering Passive Mode (192,168,1,1,88,50).  
150 Here comes the directory listing.  
-rw-r--r-- 1 0 0 25 Sep 23 14:15 ftpfile.txt  
-rw-r--r-- 1 0 0 25 Sep 23 14:14 test.txt  
226 Directory send OK.
```

```
ftp> get test.txt  
local: test.txt remote: test.txt  
227 Entering Passive Mode (192,168,1,1,171,108).  
150 Opening BINARY mode data connection for test.txt (25 bytes).  
226 Transfer complete.  
25 bytes received in 3.3e-05 secs (757.58 Kbytes/sec)  
ftp> ls  
227 Entering Passive Mode (192,168,1,1,88,50).  
150 Here comes the directory listing.  
-rw-r--r-- 1 0 0 25 Sep 23 14:15 ftpfile.txt  
-rw-r--r-- 1 0 0 25 Sep 23 14:14 test.txt  
226 Directory send OK.  
ftp> bye  
221 Goodbye.  
[root@localhost ~]#
```

Practical no.: 6 DNS, DHCP, mail server

Practical 6(a) Configure dns

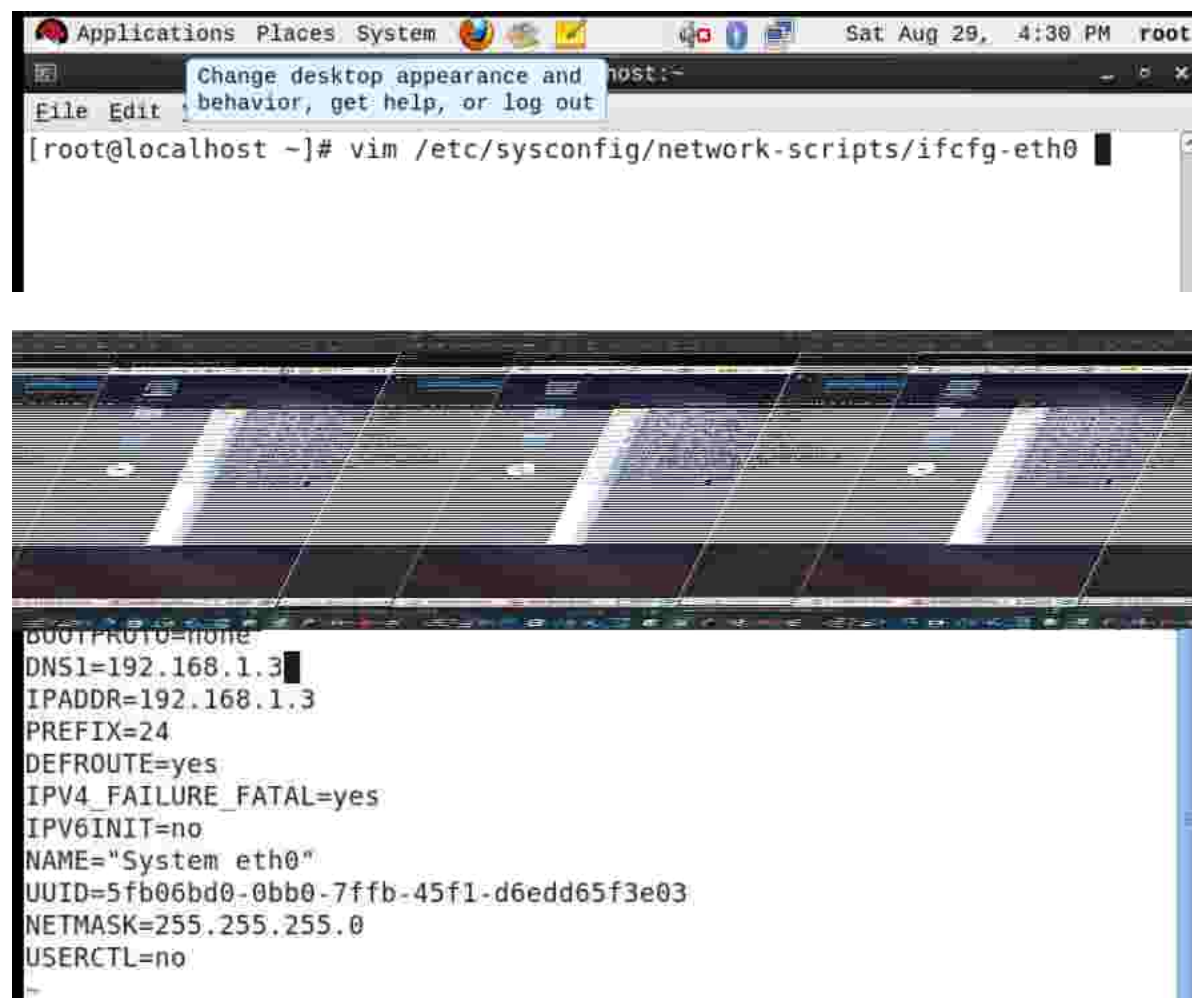
DNS Configuration

1) root@server ~]#ifconfig

```
root@server:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 08:0C:29:70:16:8A
          inet addr:192.168.1.3  Bcast:192.168.1.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe70:168a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:202 errors:0 dropped:0 overruns:0 frame:0
          TX packets:64 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23664 (23.1 KiB)  TX bytes:10775 (10.5 KiB)
          Interrupt:19 Base address:0x2000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:382 errors:0 dropped:0 overruns:0 frame:0
          TX packets:382 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:46192 (45.1 KiB)  TX bytes:46192 (45.1 KiB)
```

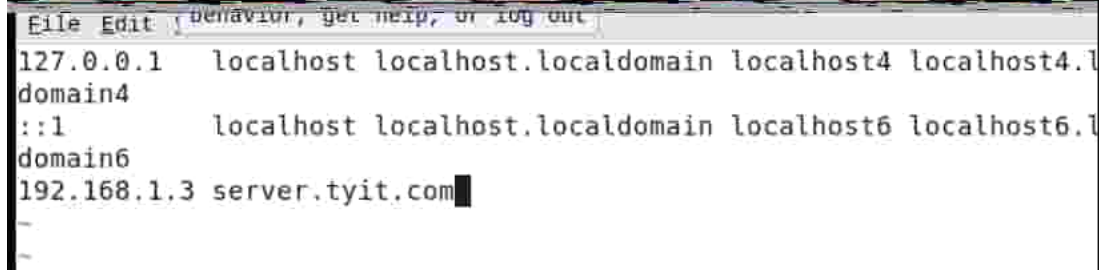
2) root@server ~]#vim /etc/sysconfig/network-script/ifcfg - eth0



```
Applications Places System Sat Aug 29, 4:30 PM root
Change desktop appearance and behavior, get help, or log out
[root@localhost ~]# vim /etc/sysconfig/network-scripts/ifcfg-eth0

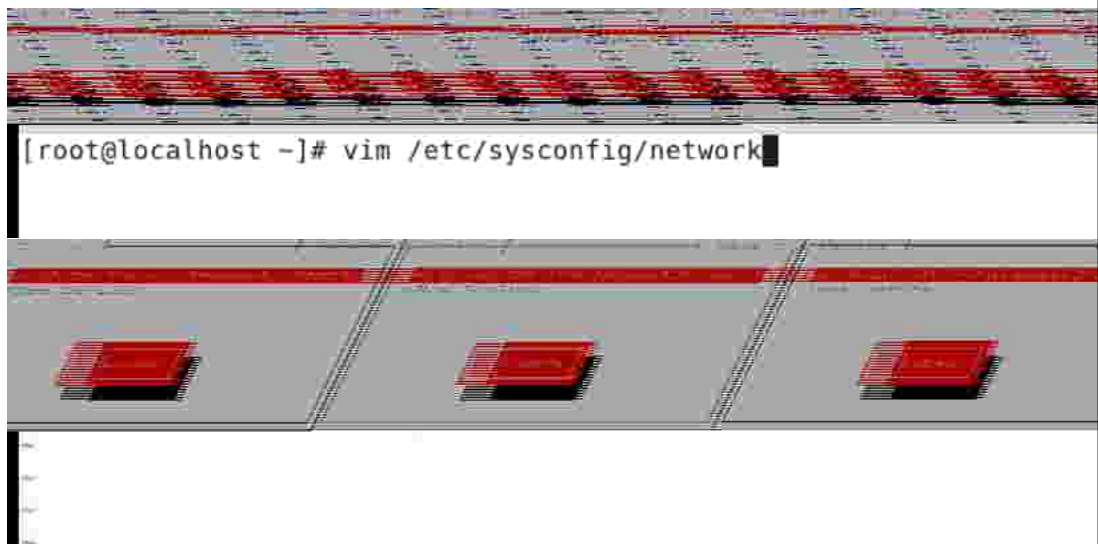
BOOTPROTO=none
DNS1=192.168.1.3
IPADDR=192.168.1.3
PREFIX=24
DEFROUTE=yes
IPV4_FAILURE_FATAL=yes
IPV6INIT=no
NAME="System eth0"
UUID=5fb06bd0-0bb0-7ffb-45f1-d6edd65f3e03
NETMASK=255.255.255.0
USERCTL=no
```

3) root@server ~]#vim /etc/hosts



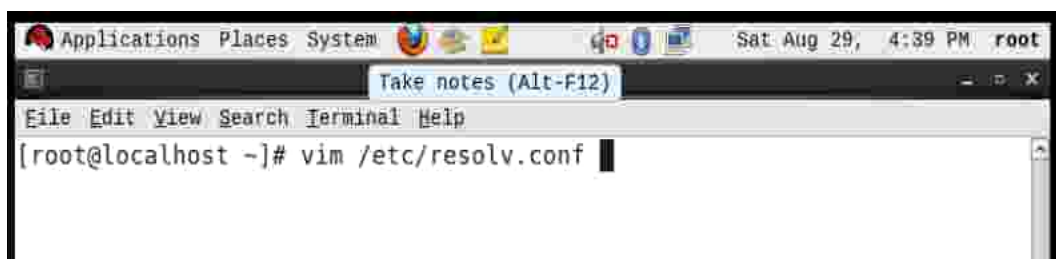
```
File Edit View Search Terminal Help
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
192.168.1.3 server.tyit.com
```

4) root@server ~] #vim /etc/sysconfig/network



```
[root@localhost ~]# vim /etc/sysconfig/network
```

5) root@server ~]#vim /etc/resolv.conf



```
Applications Places System Sat Aug 29, 4:39 PM root
Take notes (Alt-F12)
File Edit View Search Terminal Help
[root@localhost ~]# vim /etc/resolv.conf
```

```
1 # Generated by NetworkManager
2
3
4 # No nameservers found; try putting DNS servers into your
5 # ifcfg files in /etc/sysconfig/network-scripts like so:
6 #
7 # DNS1=xxx.xxx.xxx.xxx
8 # DNS2=xxx.xxx.xxx.xxx
9 # DOMAIN=lab.foo.com bar.foo.com
10 search tyit.com
11 nameserver 192.168.1.3
```

6) root@server ~]service network restart

Desktop -> CD -> Package -> bind -> install

```
package bind is not installed
[root@localhost Packages]# rpm -ivh bind*
warning: bind-9.7.0-5.P2.el6.i686.rpm: Header V3 RSA/SHA256 Signature
key ID fd431d51: NOKEY
Preparing...
##### [100%]
package bind-libs-32:9.7.0-5.P2.el6.i686 is already installed
package bind-utils-32:9.7.0-5.P2.el6.i686 is already installed
[root@localhost Packages]# rpm -q bind
package bind is not installed
[root@localhost Packages]# rpm -ivh bind-9.7.0-5.P2.el6.i686.rpm
warning: bind-9.7.0-5.P2.el6.i686.rpm: Header V3 RSA/SHA256 Signature
key ID fd431d51: NOKEY
Preparing...
##### [100%]
1:bind
##### [100%]
```

root@server ~]vim /etc/named.conf

Line no.11 :- Listen – on port 53 {192.168.1.3}

Change this from 127.0.0.1 to current Machine IP address.

Line no.12 :- Comment it using “#”

listen –on – v6 port 53{ :: 1};

Line no.17 :- allow – query{any;}

Check and Notedown the last line of the file :-



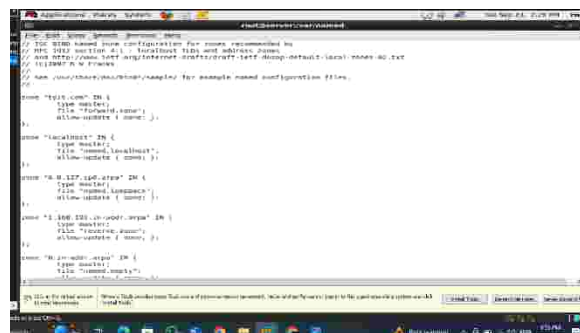
```

root@server:/var/named
File Edit View Search Terminal Help
named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
// server as a caching only nameserver (as a localhost DNS resolver only).
// See /usr/share/doc/bind-*/sample/ for example named configuration files.
//
options {
    listen-on port 53 { 192.168.1.3; };
    listen-on-v6 port 53 { ::1; };
    directory "/var/named";
    dump-file "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named.stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    allow-query { any; };
    recursion yes;

    dnssec-enable yes;
    dnssec-validation yes;
    dnssec-lookaside auto;
}
1,2 Top

```

8) root@server ~] #vim /etc/named.rfc1912.zones

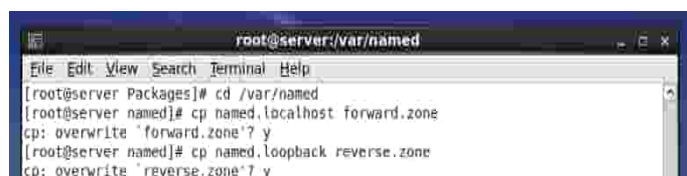


Save the file :- :wq

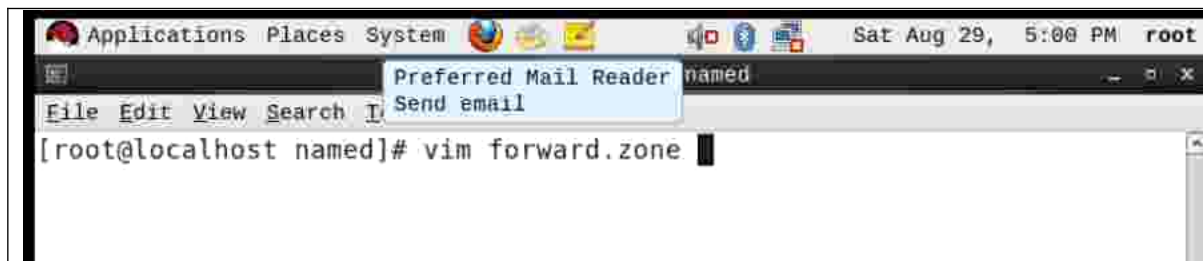
9) root@server ~]#cd /var/named

10) root@server named]#cp named.localhost forward.zone

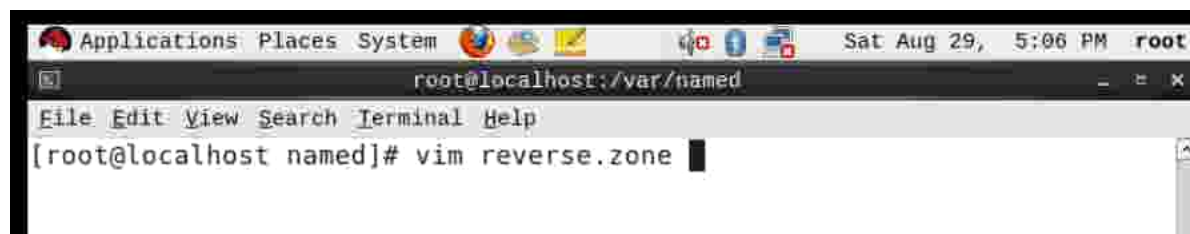
11) root@server named]#cp named.loopback reverse.zone



root@server named]#vim forward.zone



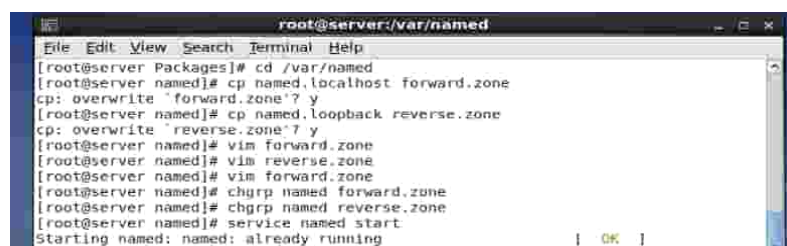
12) root@server named]#vim reverse.zone



13) root@server named]#chgrp named forward.zone

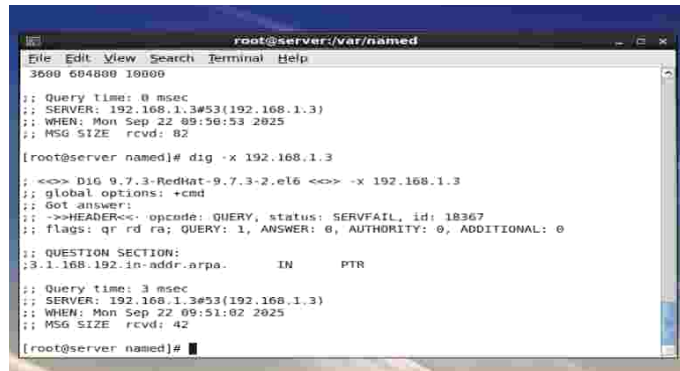
14) root@server named]#chgrp named reverse.zone

15) root@server named]#service named start



16) To check whether DNS is working type the following
Before running command check whether the network connection is connected

- 1) dig server.tyit.com
- 2) dig -x 192.168.1.3



```
root@server:/var/named
3680 604800 18800

;; Query time: 0 msec
;; SERVER: 192.168.1.3#53(192.168.1.3)
;; WHEN: Mon Sep 22 09:50:53 2025
;; MSG SIZE rcvd: 82

[root@server named]# dig -x 192.168.1.3

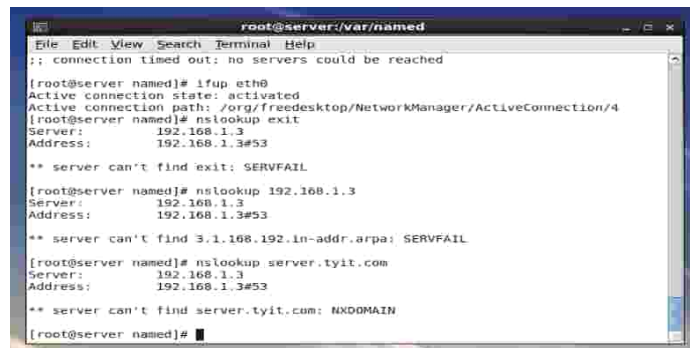
<<>> DIG 9.7.3-RedHat-9.7.3-2.el6 <<>> -x 192.168.1.3
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: SERVFAIL, id: 18367
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;3.1.168.192.in-addr.arpa.      IN      PTR

;; Query time: 3 msec
;; SERVER: 192.168.1.3#53(192.168.1.3)
;; WHEN: Mon Sep 22 09:51:02 2025
;; MSG SIZE rcvd: 42

[root@server named]#
```

17) To check in the network,type the following (i)ns lookup
>server.tyit.com
>192.168.1.3
>exit.



```
root@server:/var/named
;; connection timed out: no servers could be reached

[root@server named]# ifup eth0
Active connection state: activated
Active connection path: /org/freedesktop/NetworkManager/ActiveConnection/4
[root@server named]# nslookup exit
Server:
192.168.1.3
Address:
192.168.1.3#53

** server can't find exit: SERVFAIL

[root@server named]# nslookup 192.168.1.3
Server:
192.168.1.3
Address:
192.168.1.3#53

** server can't find 3.1.168.192.in-addr.arpa: SERVFAIL

[root@server named]# nslookup server.tyit.com
Server:
192.168.1.3
Address:
192.168.1.3#53

** server can't find server.tyit.com: NXDOMAIN

[root@server named]#
```

Practical 6(b) Configure dhcp

We will configure a dhcp server and will lease ip address to clients. we are using two systems one linux server one linux clients. dhcp rpm is required to configure dhcp server.

Before starting process of configuring we go to network connections to pass network address and netmask for that go to network connection -> vpn connections ->configure vpn->wired tab->click on

system eth0 and edit->ipv4 settings->in addresses table give address:192.168.1.3 and netmask 255.255.255.0 and press apply

Step 1 :- First we have to check whether DHCP is available on our machine or not that we can check with rpm command.

#rpm -qa dhcp

Step 2:- If DHCP package is not installed. Use the following command to install DHCP Package.

First move to Package Folder.

#cd /media/RHEL/Package

Output : -/media/RHEL/Package Now install DHCP Package

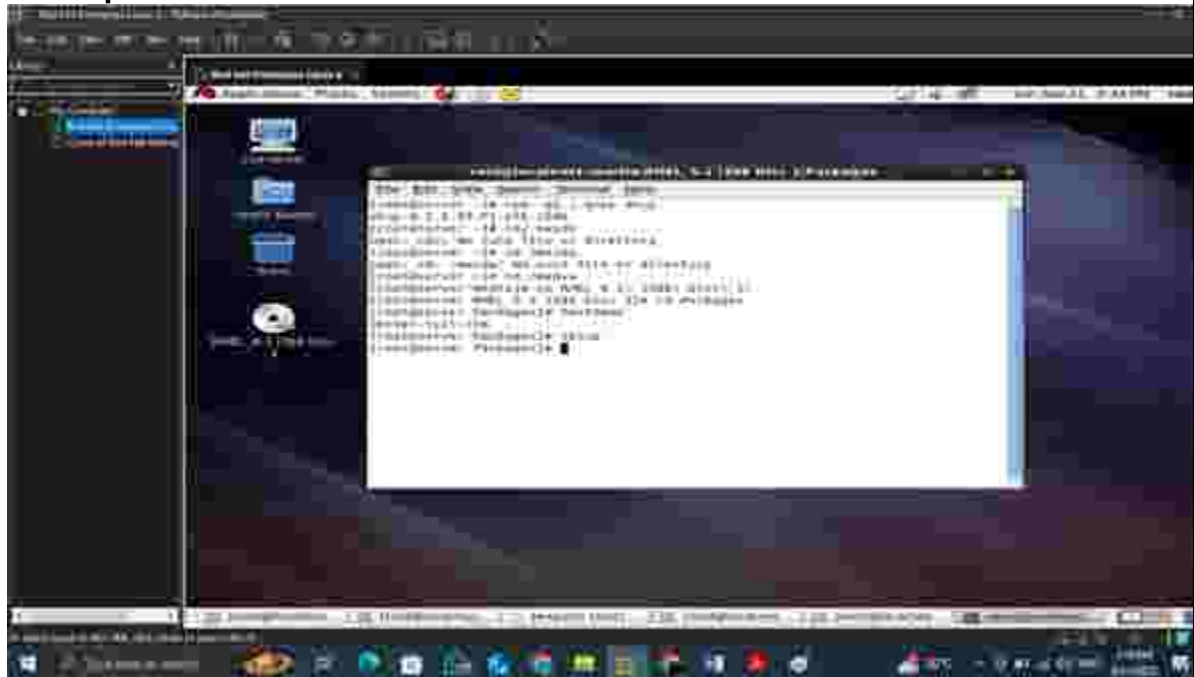
#rpm -ivh DHCP*

Step 3 :- Check the hostname of your linux system.

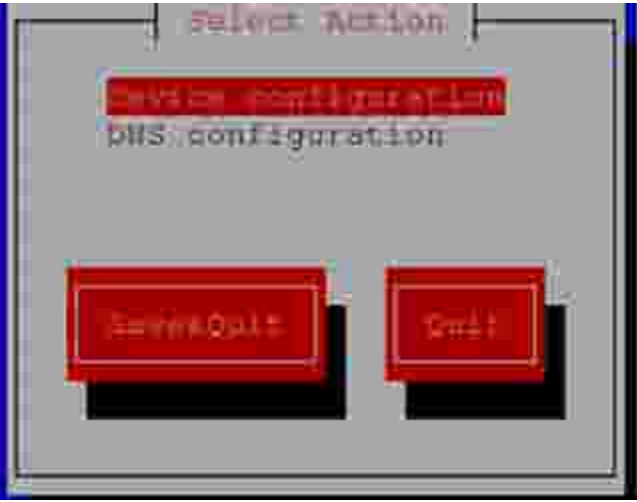
#hostname

Step 4:- Now check dhcpd service in system service it should be on

#setup

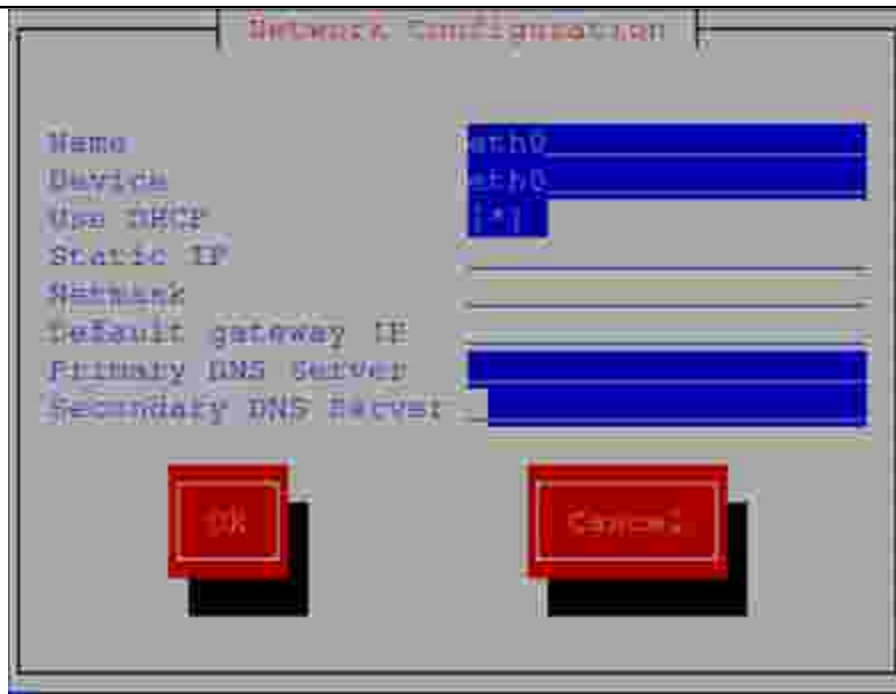


This will launch a new window select network configuration

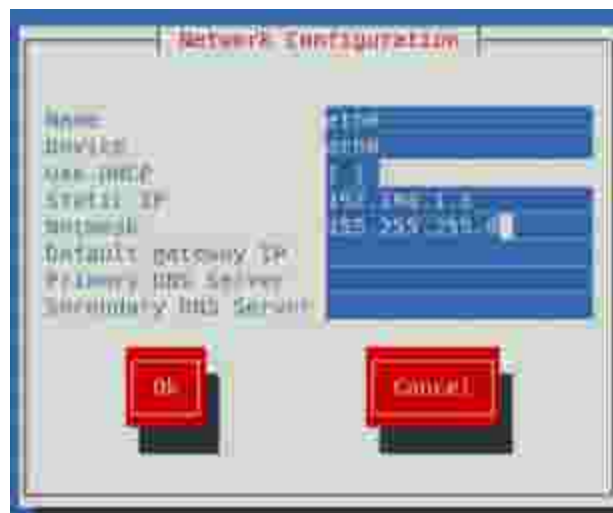


Now a new window will show you all available LAN card select your LAN card (if you don't see any LAN card here mean you don't have install driver)





Select Use DHCP Option and remove the [*] dhcpd option. now enter static IP Address.



Click on OK, quit and again quit to come back on root prompt.

Step 5:- Restart the network service so new ip address can take place on LAN card To disable network we use following command

#ifdown eth0

To disable network we use following command

#ifup eth0

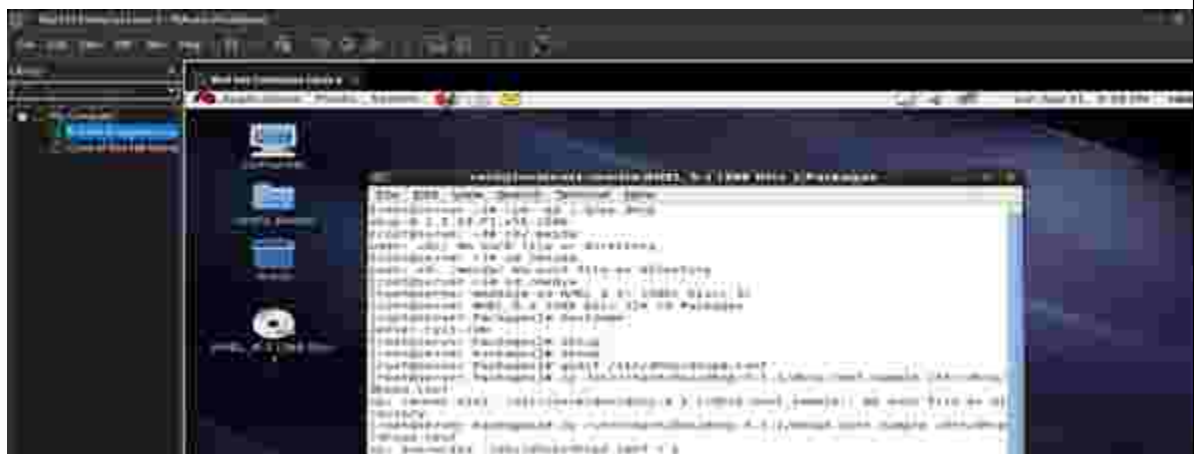
Step 6 :- main configuration file of dhcp server is dhcpd.conf. This file located on

/etc directory. If this file is not present there or you have corrupted this file, then copy new file first, if ask for overwrite press "y".


```
[root@server Packages]# setup
[root@server Packages]# gedit /etc/dhcp/dhcpd.conf
```

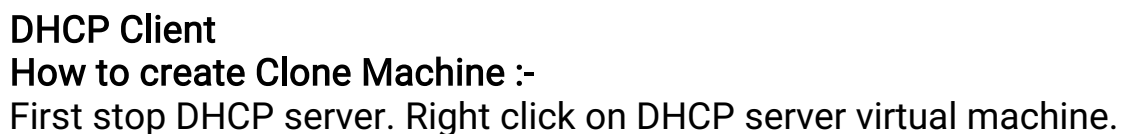
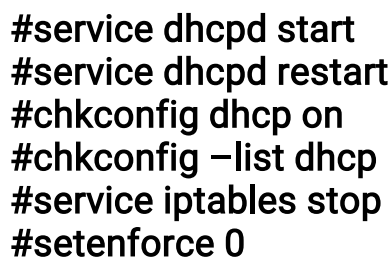


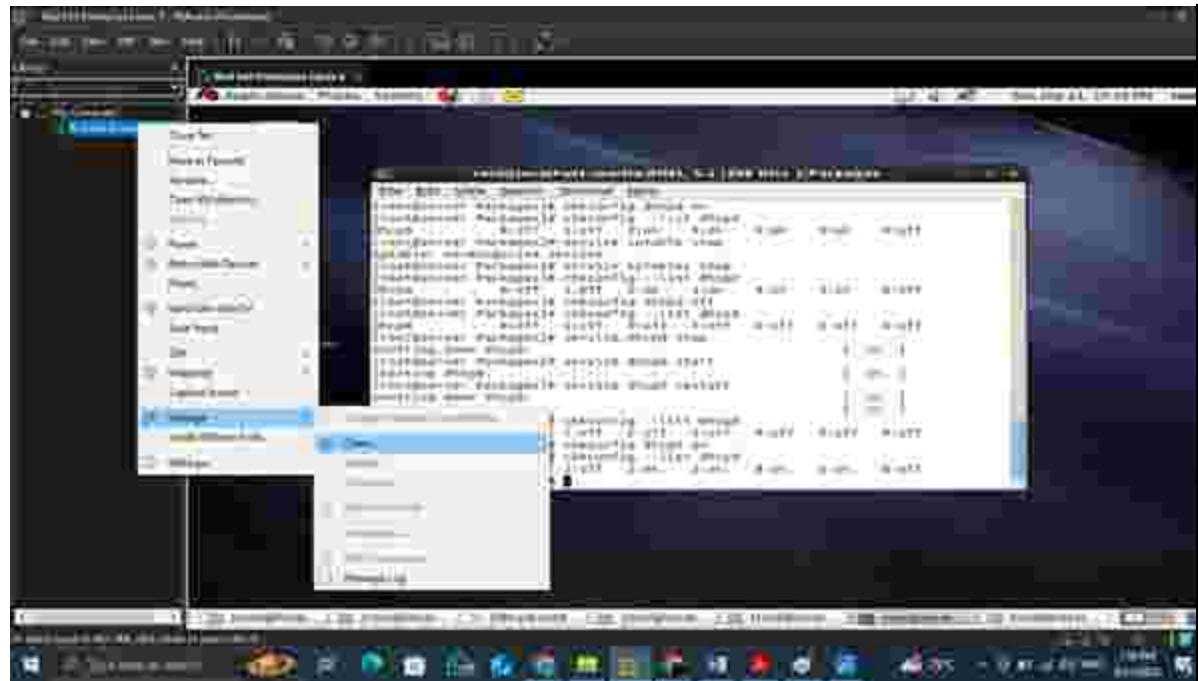
by default when you install DHCP Package it will create dhcpd.conf.sample file in /usr directory (/usr/sample/doc/dhcp-4.1.2/dhcpd.conf.sample) now copy the file to /etc directory and replace with the old file.



Step 7 :- Now open /etc/dhcp/dhcpd.conf
#gedit /etc/dhcp/dhcpd.conf
default entry is this file look like this







Go to manage and select clone option
It will open **Clone Virtual Machine Wizard** Click **Next** to proceed.



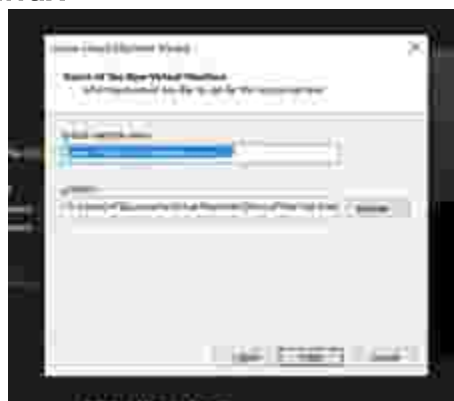
Here select the first option **The Current State** in the virtual machine and click **Next** to Proceed.



Now select **Create a Full Clone** Option and click **Next**.



Now Provide name to your Virtual Machine or set it default **Clone of Red Hat Enterprise Linux**



Once the clone is created click on **close**



Now our clone machine is ready to use. First start DHCP Server and then start Clone/client virtual machine.

Now we are on client machine and we will check whether through dhcp, ip address can be given to our client machine or not before that we have to check currently our machine is configured manual or dhcp. Through wizard we will check on network

Right click on Network icon at right top corner on desktop → Edit Connection → Select system eth0

→ Click on Edit button → select IPv4 setting option → see the method manual Change it to DHCP (Automatically)



ifconfig

OR

This command is use to check network configuration and IP address.

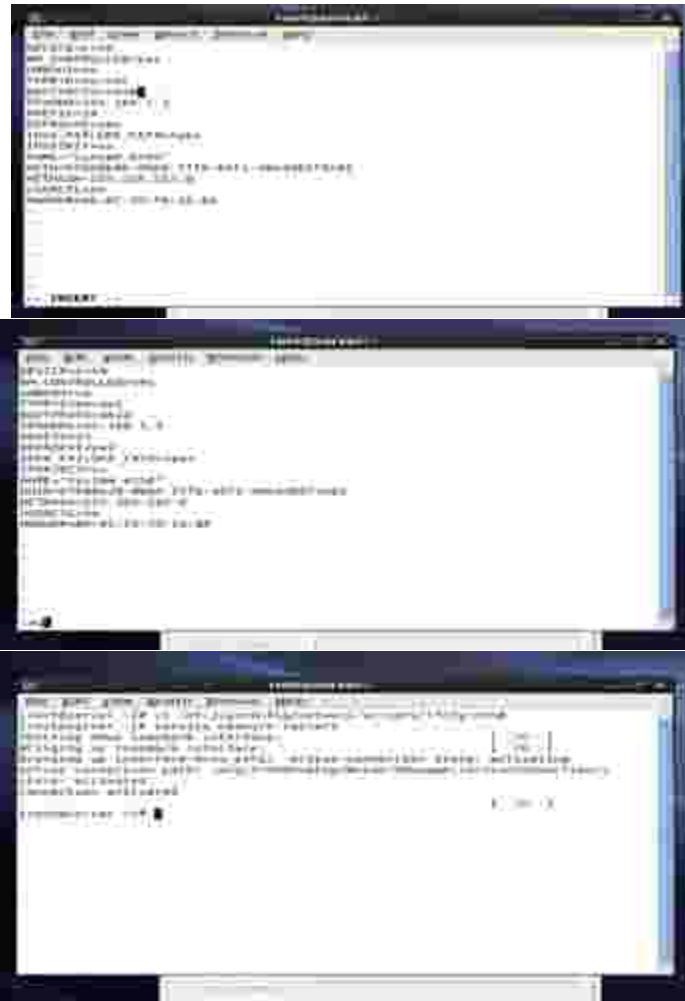
#vi /etc/sysconfig/network-scripts/ifcfg-eth0

Change BOOTPROTO = dhcp Save the file.

#service network restart

Now use ifconfig command to check whether dhcp client get the ip address and all network information from dhcp client or not.





Practical no 6(c): Configuring Mail Server

Before configuring sendmail, verify whether it is installed or not as follows:

```
#rpmquery -qa | grep sendmail
```

It gives the output that whether sendmail is installed and also shows the version of the installed package if installed. If not found, then install the package as follows:

```
#rpm -ivh procmail*
```

```
#rpm -ivh sendmail*
```

```
test@server:~$ rpm -qa sendmail
sendmail-8.14.4-8.el6.x86_64
test@server:~$ rpm -qa | grep sendmail
sendmail-8.14.4-8.el6.x86_64
test@server:~$ rpm -qa sendmail
sendmail-8.14.4-8.el6.x86_64
test@server:~$ rpm -q sendmail
package sendmail is not installed
test@server:~$ cd /media
test@server media]$ cd RHEL_6.1\ 1386\ Disc\ 1\
test@server RHEL_6.1\ 1386\ Disc\ 1]$ cd Packages
test@server Packages]$ rpm -ivh sendmail*
warning: sendmail-8.14.4-8.el6.1686.rpm: Header V3 RSA/SHA256 Signature, key ID fd431d51: NOKEY
error: Failed dependencies:
  procmail is needed by sendmail-8.14.4-8.el6.1686
test@server Packages]$ rpm -ivh procmail*
warning: procmail-3.22-25.1.el6.1686.rpm: Header V3 RSA/SHA256 Signature, key ID fd431d51: NOKEY
Preparing...
1:procmail
test@server Packages]$ rpm -ivh sendmail*
warning: sendmail-8.14.4-8.el6.1686.rpm: Header V3 RSA/SHA256 Signature, key ID fd431d51: NOKEY
Preparing...
1:sendmail
2:sendmail-ct
test@server Packages]$ vim /etc/mail/sendmail.mc
```


By default, Sendmail Server allows to connect to localhost only
So we should edit the /etc/mail/sendmail.mc file to allow connect to other hosts. To open the configuration file of sendmail, the command is as follows:

```
# vim /etc/mail/sendmail.mc
```



```
[root@server Packages]# vim /etc/mail/sendmail.mc
```

Show hidden line with :se nu option on vi editor command mode. Go to line number 116 DAEMON_OPTIONS ('Port = smtp , Addr =192.168.1.1, Name='MTA')

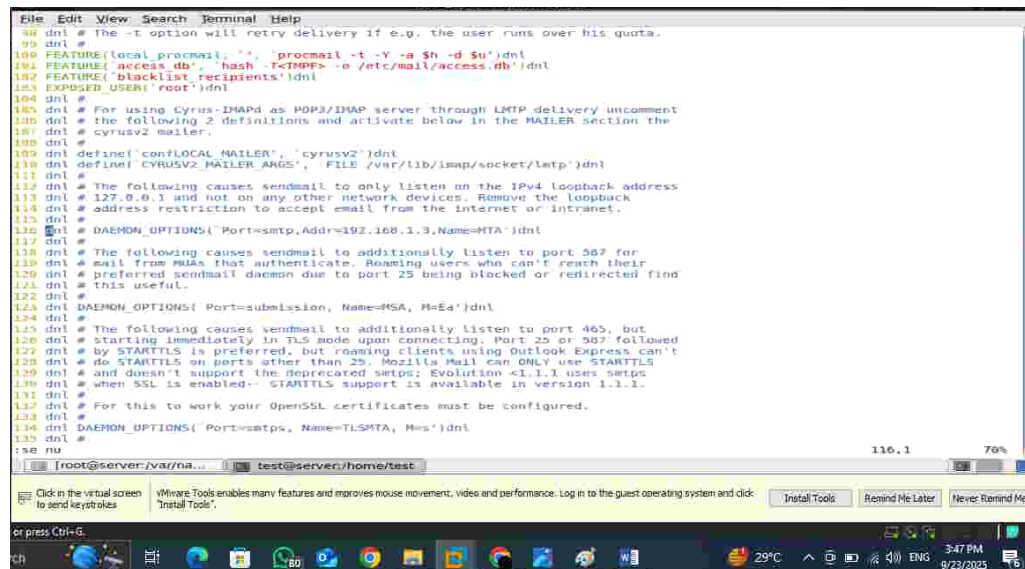
You can allow other computers to use your sendmail server by commenting

In the sendmail.mc file, lines that begin with dn1 , which stands to delete newline are constant.

Some lines end with dn1, but lines ending with dn1 are not comments.

Comment this line with dn1 keyword followed by # sign dn1 #

DAEMON_OPTIONS ('Port = smtp , Addr =192.168.1.1 , Name='MTA')



```
File Edit View Search Terminal Help
98 dn1 # The -t option will retry delivery if e.g. the user runs over his quota.
99 dn1 #
100 FEATURE(local_procmail, ' ', 'procmail -t -Y -a $h -d $u')dn1
101 FEATURE(access_db, 'hash -tDBFPs -o /etc/mail/access.db')dn1
102 FEATURE('blacklist_recipients')dn1
103 EXPOSED_USER('root')dn1
104 dn1 #
105 dn1 # For using Cyrus-IMAPd as POP3/IMAP server through LMTP delivery uncomment
106 dn1 # the following 2 definitions and activate below in the MAILER section the
107 dn1 # cyrusv2 mailer.
108 dn1 #
109 dn1 define('confLOCAL_MAILER', 'cyrusv2')dn1
110 dn1 define('CYRUSV2_MAILER_ARGS', 'FILE /var/lib/imap/socket/localhost')dn1
111 dn1 #
112 dn1 # The following causes sendmail to only listen on the IPv4 loopback address
113 dn1 # 127.0.0.1 and not on any other network devices. Remove the loopback
114 dn1 # address restriction to accept email from the Internet or intranet.
115 dn1 #
116 dn1 # DAEMON_OPTIONS( 'Port=smtp,Addr=192.168.1.1,Name=MTA')dn1
117 dn1 #
118 dn1 # The following causes sendmail to additionally listen to port 587 for
119 dn1 # mail from MUAs that authenticate. Roaming users who can't reach their
120 dn1 # preferred sendmail daemon due to port 25 being blocked or redirected find
121 dn1 # this useful.
122 dn1 #
123 dn1 DAEMON_OPTIONS( Port=submission, Name=MSA, Mx=Ea')dn1
124 dn1 #
125 dn1 # The following causes sendmail to additionally listen to port 465, but
126 dn1 # starting immediately in TLS mode upon connecting. Port 25 or 587 followed
127 dn1 # by STARTTLS is preferred, but roaming clients using Outlook Express can't
128 dn1 # do STARTTLS on ports other than 25. Mozilla's Mail can ONLY use STARTTLS
129 dn1 # and doesn't support the deprecated smtps; Evolution <1.1.1 uses smtps
130 dn1 # when SSL is enabled-- STARTTLS support is available in version 1.1.1.
131 dn1 #
132 dn1 # For this to work your OpenSSL certificates must be configured.
133 dn1 #
134 dn1 DAEMON_OPTIONS( Port=smtps, Name=TLSMTA, Mx=Ea')dn1
135 dn1 #
:se nu
116,1 76%
```

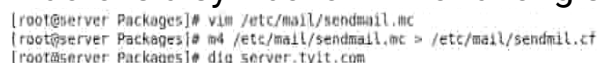
Save this file with :wq and Exit

Now generate new sendmail.cf file by using m4 command as shown below.

```
# m4 /etc/mail/sendmail.mc > /etc/mail/sendmail.cf
```

m4 is a macro processor i.e. a tool that follows principle of shorthand writing.

Macro is a symbolic link for a long string of characters.



```
[root@server Packages]# vim /etc/mail/sendmail.mc
[root@server Packages]# m4 /etc/mail/sendmail.mc > /etc/mail/sendmail.cf
[root@server Packages]# dig server.tyit.com
```

Now check DNS Configuration:

- A linux server with IP address 192.168.1.3 and hostname server.tyit.com
 - A Configured DNS server on Linux server
 - Updated /etc/hosts file
 - Running portmap and xinetd services (service xinetd stop , service portmap stop)
 - Firewall should be off on server (service iptables stop) We have configured all these steps in our pervious article.
- Check DNS server Before start configuration of sendmail server we have to check whether our DNS is properly configured or not .

```
[root@server Packages]# vim /etc/mail/sendmail.mc
[root@server Packages]# m4 /etc/mail/sendmail.mc > /etc/mail/sendmail.cf
[root@server Packages]# dig server.tyit.com

; <<>> DIG 9.7.3-RedHat-9.7.3-2.el6 <<>> server.tyit.com
;; global options: +cmd
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 39069
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 1, ADDITIONAL: 0

;; QUESTION SECTION:
;server.tyit.com.                IN      A

;; ANSWER SECTION:
server.tyit.com.                86400   IN      A      192.168.1.3
```

Now open forward.zone file from named directory

vi /var/named/forward.zone

Add MX Entry in forward.zone as follows:

IN MX 192.168.1.3

```
[root@server Packages]# vi /var/named/forward.zone

File Edit View Search Terminal Help
#TTL 1D
@      IN SOA  server.tyit.com. root.server.tyit.com. (
                                1d      ; serial
                                1h      ; refresh
                                1m      ; retry
                                1w      ; expire
                                3h      ; minimum
)
      IN NS  server.tyit.com.
server IN A  192.168.1.3
IN MX 192.168.1.3
~
~
~
```

Now restart sendmail service using:

service sendmail restart

```
File Edit View Search Terminal Help
[root@server Packages]# service sendmail restart
Shutting down sm-client: [ OK ]
Shutting down sendmail: [ FAILED ]
Starting sendmail: [ OK ]
Starting sm-client: [ OK ]
[root@server Packages]# service sendmail stop
Shutting down sm-client: [ OK ]
Shutting down sendmail: ^[[A^[[A [ OK ]
[root@server Packages]# service sendmail restart
Shutting down sendmail: [ FAILED ]
Starting sendmail: [ OK ]
Starting sm-client: [ OK ]
```

If sendmail service restart without any error means you have configured sendmail successfully.

Configuring sendmail Client Side

Here we are going to test sendmail server by sending and receiving mails.

Now create one user

useradd test

Set the password for that user

passwd test

```
[root@server ~]# useradd test
[root@server ~]# passwd test
Changing password for user test.
New password:
BAD PASSWORD: It is too short
BAD PASSWORD: is too simple
Retype new password:
passwd: all authentication tokens updated successfully.
```

mail test@server.tyit.com

It will ask for the Subject and Body of the mail Example:

Subject: testmail

Body: Hi Everyone. This is my First sendmail program.

Save the file by pressing keys which indicates End of file



```
File Edit View Search Terminal Help
[root@server ~]# mail test@server.tyit.com
Subject: test mail
hi everyone
this is mail test
EOT
```

Type su – test

The above command switch to the user name test.

To check whether mail has received or not , type mail command

mail

The above command open the mailbox for the current login user.

It will give you the details of mail received by the subject name.

```
[root@server ~]# su - test
[test@server ~]$ su - test
Password:
[test@server ~]$ mail
Heirloom Mail version 12.4 7/29/08. Type ? for help.
"/var/spool/mail/test": 1 message 1 new
>N 1 root          Wed Sep 24 02:56 23/828 "test mail"
& 1
```

New emails are shown with letter N at starting and unread mail shown with letter U at starting. Once you read the mail U and N notification get cleared. To read that mail type the number which will be given in previous output

1

You can now read the contents of mail.

To exit type ctrl + d

```
|test@server ~|$ mail
Heirloom Mail version 12.4 7/29/08. Type ? for help.
"/var/spool/mail/test": 1 message 1 new
>H 1 root Wed Sep 24 02:56 23/828 "test mail"
& 1
Message 1:
From: root@server.tyit.com Wed Sep 24 02:56:53 2025
Return-Path: <root@server.tyit.com>
X-Original-To: test@server.tyit.com
Delivered-To: test@server.tyit.com
From: root <root@server.tyit.com>
Date: Wed, 24 Sep 2025 02:56:53 +0530
To: test@server.tyit.com
Subject: test mail
User-Agent: Heirloom mailx 12.4 7/29/08
Content-Type: text/plain; charset=us-ascii
Status: R

hi everyone
this is mail test

& Held 1 message in /var/spool/mail/test
You have mail in /var/spool/mail/test
```

Practical no.: 8 Shell scripts

Practical 8(a)

Writing shell scripts

- 1) write a shell script that will accept directory name if the directory does not exist create a directory create 3 empty files in that directory if the directory exist list the content of its

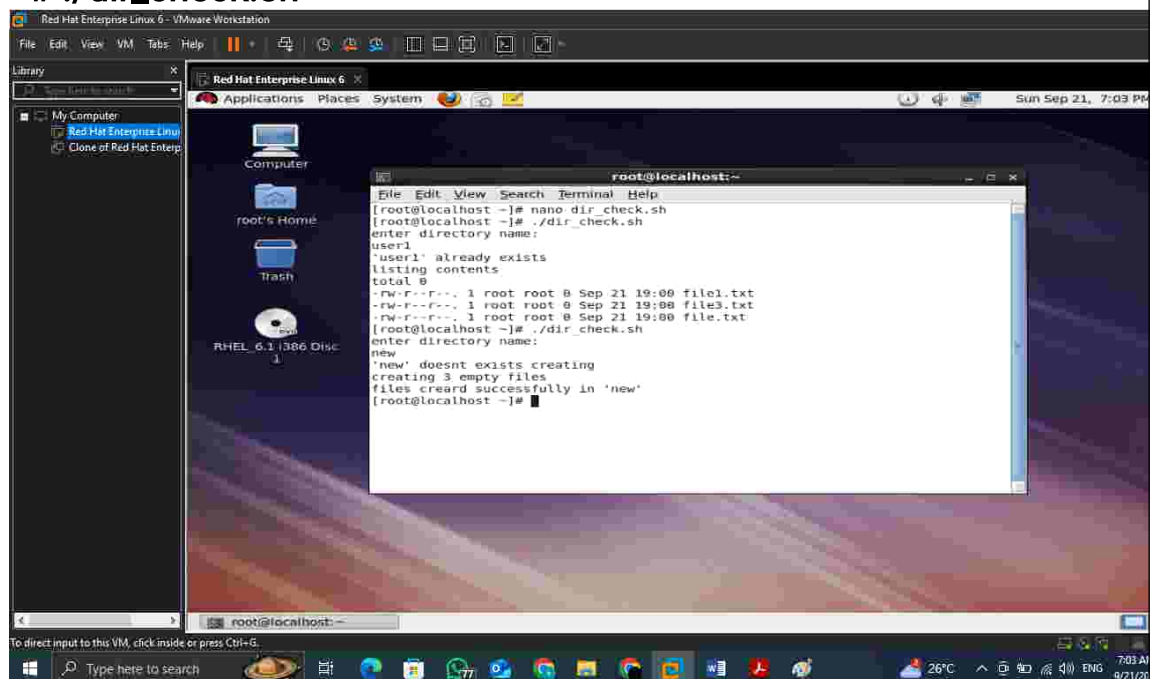
```
># nano dir_check.sh  
#!/bin/bash
```

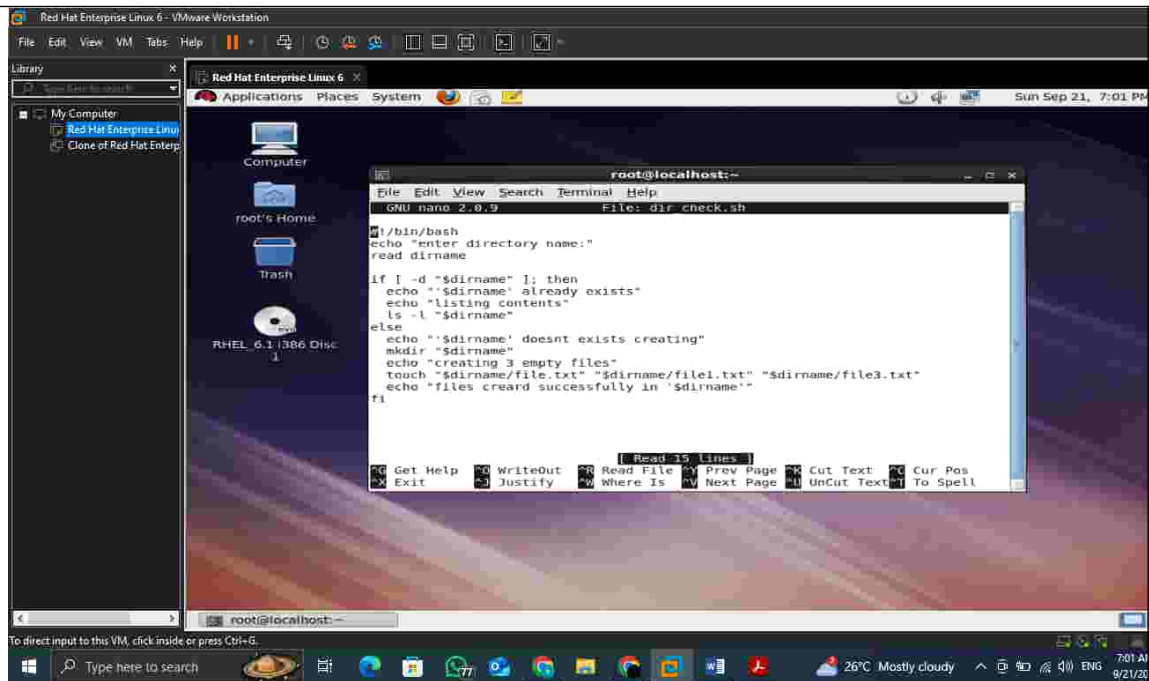
```
echo "Enter directory name:"  
read dirname
```

```
if [ -d "$dirname" ]; then  
    echo "Directory '$dirname' already exists."  
    echo "Listing contents:"  
    ls -l "$dirname"
```

```
else  
    echo "Directory '$dirname' does not exist. Creating..."  
    mkdir "$dirname"  
    echo "Creating 3 empty files..."  
    touch "$dirname/file1.txt" "$dirname/file2.txt"  
    "$dirname/file3.txt"  
    echo "Files created successfully in '$dirname'."
```

```
fi  
># chmod +x dir_check.sh  
># ./dir_check.sh
```





2) write a shell script to process management 1)list the name of currently logged in user 2)check that group which current user belong to 3)view acting process 4)find information of process like pid ,user/owner, pty

```
># nano pm.sh
#!/bin/bash
```

```
echo "_____"
```

```
echo "1) Currently logged in user(s):"
```

```
whoami
```

```
who
```

```
echo "_____"
```

```
echo "2) Groups of current user:"
```

```
groups
```

```
id
```

```
echo "_____"
```

```
echo "3) Currently running/active processes:"
```

```
ps -e
```

```
echo "_____"
```

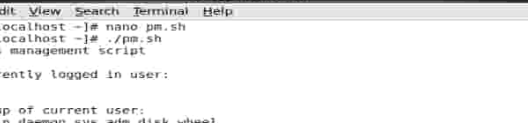
```
echo "4) Process details (PID, USER, TTY, COMMAND):"
```

```
ps -eo pid,user,TTY,comm
```

```
echo "_____"
```

```
># chmod +x pm.sh
```

```
># ./pm.sh
```



```

root@localhost:~
File Edit View Search Terminal Help
[root@localhost ~]# nano pm.sh
[root@localhost ~]# ./pm.sh
process management script

1) currently logged in user:
root

2) group of current user:
root bin daemon sys adm disk wheel

3) active process:

  PID TTY          TIME CMD
  1 ?        00:00:01 init
  2 ?        00:00:00 kthreadd
  3 ?        00:00:00 migration/0
  4 ?        00:00:00 ksoftirqd/0
  5 ?        00:00:00 migration/0
  6 ?        00:00:00 watchdog/0
  7 ?        00:00:00 events/0
  8 ?        00:00:00 cpuset
  9 ?        00:00:00 khelper
 10 ?        00:00:00 netns
 11 ?        00:00:00 async/mgr
 12 ?        00:00:00 pm

```

[illegible]

```

root@localhost:~
File Edit View Search Terminal Help
GNU nano 2.0.9 File: pm.sh

#!/bin/bash
echo "process management script"

echo -e "\n1) currently logged in users:"
whoami

echo -e "\n2) group of current user:"
groups

echo -e "\n3) active process:"
ps -u $(whoami)

echo -e "\n4) enter a process name to find info:"
read pname
echo "searching for process '$pname'..."
echo "searching for process '$pname'..."
ps -ef | grep "$pname" | grep -v "$grep"

```

Get Help WriteOut Read File Prev Page Cut Text Cur Pos
Exit Justify Where Is Next Page UnCut Text To Spell

3) write a shell script for directory management with the following menu options ,create and remove directory, copy directory, move directory, list the contents of directory ,change the directory ,exit

```
># nano dm.sh
```

```
#!/bin/bash
```

while true

do

echo "_____"

```
echo " Directory Management Menu"
```

```
echo "_____"
```

```
echo "1) Create Directory"
```

```
echo "2) Remove Directory"
```

echo "3) Copy Directory"

```
echo "4) Move Directory"
echo "5) List Contents of Directory"
echo "6) Change Directory"
echo "7) Exit"
echo "-----"
read -p "Enter your choice [1-7]: " choice

case $choice in
    1) # Create directory
        read -p "Enter directory name to create: " dname
        mkdir -p "$dname"
        echo "Directory '$dname' created."
        ;;
    2) # Remove directory
        read -p "Enter directory name to remove: " dname
        rm -r "$dname"
        echo "Directory '$dname' removed."
        ;;
    3) # Copy directory
        read -p "Enter source directory: " src
        read -p "Enter destination: " dest
        cp -r "$src" "$dest"
        echo "Directory '$src' copied to '$dest'."
        ;;
    4) # Move directory
        read -p "Enter source directory: " src
        read -p "Enter destination: " dest
        mv "$src" "$dest"
        echo "Directory '$src' moved to '$dest'."
        ;;
    5) # List contents
        read -p "Enter directory to list: " dname
        ls -l "$dname"
        ;;
    6) # Change directory
        read -p "Enter directory to change to: " dname
        cd "$dname" || echo "Directory not found!"
        echo "Now in: $(pwd)"
        ;;
    7) # Exit
        echo "Exiting Directory Management."
        exit 0
        ;;
)
```

```

*) # Invalid input
echo "Invalid choice, try again."
;;
esac
done
>#chmod +x dm.sh
># ./dm.sh

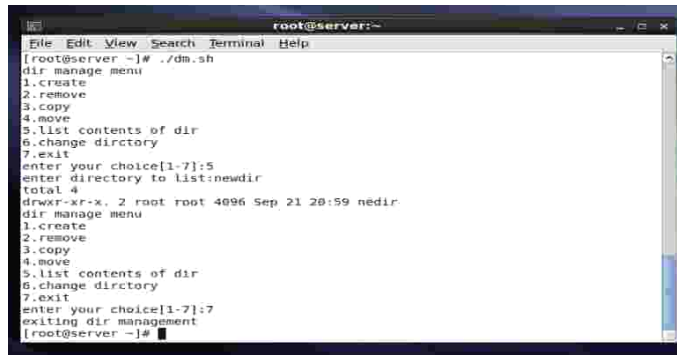
```



```

root@server:~
File Edit View Search Terminal Help
[root@server ~]# ifup eth0
Active connection state: activated
Active connection path: /org/freedesktop/NetworkManager/ActiveConnection/2
[root@server ~]# nano dm.sh
[root@server ~]# chmod +x dm.sh
[root@server ~]# ./dm.sh
dir manage menu
1.create
2.remove
3.copy
4.move
5.list contents of dir
6.change directory
7.exit
enter your choice[1-7]:1
enter dir name to create:dir
'dir' created
dir manage menu
1.create
2.remove
3.copy
4.move
5.list contents of dir
6.change directory

```



```

root@server:~
File Edit View Search Terminal Help
[root@server ~]# ./dm.sh
dir manage menu
1.create
2.remove
3.copy
4.move
5.list contents of dir
6.change directory
7.exit
enter your choice[1-7]:5
enter directory to list:newdir
total 4
drwxr-xr-x. 2 root root 4096 Sep 21 20:59 newdir
dir manage menu
1.create
2.remove
3.copy
4.move
5.list contents of dir
6.change directory
7.exit
enter your choice[1-7]:7
exiting dir management
[root@server ~]#


```



```

root@server:~
File Edit View Search Terminal Help
GNU nano 2.0.9 File: dm.sh
#!/bin/bash
while true
do
    echo "dir manage menu"
    echo "1.create"
    echo "2.remove"
    echo "3.copy"
    echo "4.move"
    echo "5.list contents of dir"
    echo "6.change directory"
    echo "7.exit"
    read -p "enter your choice[1-7]:" choice
    case $choice in
        1)
            read -p "enter dir name to create:" dname
            mkdir -p "$dname"
            echo "'$dname' created"
            ;;
        2)

```



```

        2)
            read -p "enter dir name to remove:" dname
            rm -r "$dname"
            echo "'$dname' removed"
            ;;
        3)
            read -p "enter source dir:" src
            read -p "enter destination dir:" dest
            cp -r "$src" "$dest"
            echo "'$src' copied to '$dest'"
            ;;
        4)
            read -p "enter source dir:" src
            read -p "enter destination dir:" dest
            mv -r "$src" "$dest"
            echo "'$src' moved to '$dest'"
            ;;
        5)
            read -p "enter directory to list:" dname

```



```
root@server:~  
File Edit View Search Terminal Help  
GNU nano 2.0.9 File: dm.sh  
  
read -p "enter directory to list:" dname  
ls -l "$dname"  
;;  
6)  
read -p "enter dir to change to:" dname  
cd "$dname" || echo "dir not found"  
echo "Now in $(pwd)"  
;;  
7)  
echo "exiting dir management"  
exit 0  
;;  
=)  
echo "invalid choice,try again."  
;;  
esac  
done  
  
Get Help WriteOut Read File Prev Page Cut Text Cur Pos  
Exit Justify Where Is Next Page UnCut Text To Spell
```