1. Network Configuration – Configure node1 with above details hostname,ip, dns
ip address = 172.24.2.10
gateway = 172.24.2.72
netmask = 255.255.255.0
DNS = 172.24.2.72
hostname = node1.net2.example.com
→
#ifconfig

```
[root@node1 ~]# nmcli  connection   show
NAME    UUID                                  TYPE      DEVICE
eth0    fe028960-e2df-479f-b862-f28b0570d2c3  ethernet  eth0
virbr0  ffb7f95c-bf49-4ca1-8290-d32578785237  bridge    virbr0
[root@node1 ~]#
[root@node1 ~]#
```

```
[root@node1 ~]# cd  /etc/sysconfig/network-scripts/
[root@node1 network-scripts]# pwd
/etc/sysconfig/network-scripts
[root@node1 network-scripts]# ls
ifcfg-eth0
[root@node1 network-scripts]#
```

```
[root@node1 network-scripts]# vim  ifcfg-eth0
```

```
File  Edit  View  Search  Terminal  Help
TYPE=Ethernet
BOOTPROTO=static
NAME=eth0
UUID=fe028960-e2df-479f-b862-f28b0570d2c3
DEVICE=eth0
ONBOOT=yes
IPADDR=172.24.2.10
GATEWAY=172.24.2.72
DNS1=172.24.2.72
NETMASK=255.255.255.0
```

```
[root@node1 network-scripts]# systemctl restart NetworkManager
[root@node1 network-scripts]# nmcli  connection  down  eth0
```

```
[root@node1 ~]# nmcli  connection  up  eth0
Connection successfully activated (D-Bus act
nager/ActiveConnection/4)
[root@node1 ~]#
```

```
[root@node1 ~]# reboot
```

```
[root@node1 ~]# nmcli  connection  up  eth0
Connection successfully activated (D-Bus active path
nager/ActiveConnection/4)
[root@node1 ~]# route -n
Kernel IP routing table
Destination     Gateway         Genmask         Flags
0.0.0.0         172.24.2.72     0.0.0.0         UG
172.24.2.0      0.0.0.0         255.255.255.0   U
192.168.122.0   0.0.0.0         255.255.255.0   U
[root@node1 ~]#
```

2. Configure yum repository
http://node.net2.example.com/repo/BaseOS
http://node.net2.example.com/repo/AppStream
→

```
[root@node1 etc]# cd /etc/yum
yum/          yum.repos.d/
[root@node1 etc]# cd /etc/yum.repos.d/
[root@node1 yum.repos.d]# vim exam.repo
```

```
[BASEOS]
name=RHEL9-BASE0S
baseurl=http://node.net2.example.com/repo/BaseOS
enabled=1
gpgcheck=0

[AppStream]
name=RHEL9-AppStream
baseurl= http://node.net2.example.com/repo/AppStream
enabled=1
gpgcheck=0
```

```
[root@node1 yum.repos.d]# yum clean all
13 files removed
[root@node1 yum.repos.d]# yum repolist
repo id                                 repo name
AppStream                               RHEL9-AppStream
BASEOS                                  RHEL9-BASE0S
[root@node1 yum.repos.d]# yum  repolist -v
```

3. Debug Selinux

--> A web server running on non-standard port 82 is having issues serving content. Debug and fix the issues.

--> The web server on your system can serve all the existing HTML files from /var/www/html (NOTE: Do not make any changes to these files)

--> Web service should automatically start at boot time.

→

```
[root@node1 /]# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/syste
   Active: inactive (dead)
```

```
[root@node1 /]# systemctl start httpd
Job for httpd.service failed because
See "systemctl status httpd.service"
[root@node1 /]#
```

```
[root@node1 /]# firewall-cmd --add-port=82/tcp  --permanent
success
[root@node1 /]# firewall-cmd --add-port=82/udp  --permanent
success
[root@node1 /]# firewall-cmd --add-service=http  --permanent
Warning: ALREADY_ENABLED: http
success
[root@node1 /]# firewall-cmd --reload
success
```

```
[root@node1 /]# semanage port -a -t http_port_t  -p  tcp  82
```

```
[root@node1 /]# systemctl  start  httpd
[root@node1 /]# systemctl status  httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/syste
   Active: active (running) since Sun 202
```

```
[root@node1 /]# systemctl enable  httpd
Created symlink /etc/systemd/system/mult
/lib/systemd/system/httpd.service.
[root@node1 /]#
```

4. Configure NTP on node1 such that it is client of node.net2.example.com

→

```
[root@node1 /]# rpm  -qa  chrony
chrony-4.5-1.el8.x86_64
[root@node1 /]# vi  /etc/chrony.conf
```

```
# Use public servers from the pool.nt
# Please consider joining the pool (h
#pool 2.centos.pool.ntp.org iburst
server node.net2.example.com  iburst
```

```
[root@node1 /]# systemctl  restart  chronyd
[root@node1 /]# systemctl  enable  chronyd
```

```
[root@node1 /]# timedatectl
               Local time: Sun 2024-06-16 22:13:42 IST
           Universal time: Sun 2024-06-16 16:43:42 UTC
                 RTC time: Sun 2024-06-16 16:43:41
                Time zone: Asia/Kolkata (IST, +0530)
System clock synchronized: no
              NTP service: active
          RTC in local TZ: no
```

```
[root@node1 /]# timedatectl
               Local time: Sun 2024-06-16 22:13:42 IST
           Universal time: Sun 2024-06-16 16:43:42 UTC
                 RTC time: Sun 2024-06-16 16:43:41
                Time zone: Asia/Kolkata (IST, +0530)
System clock synchronized: yes
              NTP service: active
          RTC in local TZ: no
```

5. User groups and permissions.
--> Create a group named "manager"
--> A user sarah and harry should belong to the "manager" group as a secondary group.
--> User Natasha should have a non-interactive shell and she should not be a member of the "manager" group.
--> Password for all users created should be "redhat123".
→

```
[root@node1 /]# groupadd manager
[root@node1 /]# useradd -G manager sarah
[root@node1 /]# useradd -G manager harry
[root@node1 /]# id sarah
uid=1007(sarah) gid=1008(sarah) groups=1008(sarah),1007(manager)
[root@node1 /]# id harry
uid=1008(harry) gid=1009(harry) groups=1009(harry),1007(manager)
[root@node1 /]# useradd   -s  /sbin/nologin  Natasha
[root@node1 /]# su - Natasha
This account is currently not available.
[root@node1 /]# echo "redhat123" | passwd  sarah --stdin
Changing password for user sarah.
passwd: all authentication tokens updated successfully.
[root@node1 /]# echo "redhat123" | passwd  harry --stdin
Changing password for user harry.
passwd: all authentication tokens updated successfully.
[root@node1 /]# echo "redhat123" | passwd  Natasha --stdin
Changing password for user Natasha.
passwd: all authentication tokens updated successfully.
```

6. Create the user "jean" with uid 4332 with password "redhat123".

```
[root@node1 /]# useradd  -u  4332  jean
[root@node1 /]# echo "redhat123" | passwd  jean --stdin
Changing password for user jean.
passwd: all authentication tokens updated successfully.
```

7. locate the files of owner "harry" and copy to the location /root/found directory.

```
[root@node1 /]# mkdir /root/found
[root@node1 /]# find / -user harry -exec cp -prvf {} /root/found/  \;
```

p→ means preserve permission and ownership

8. The user sarah must configure a cron job that runs daily at 2:40 pm executes /bin/echo "hiya"

→

```
[root@node1 /]# crontab -e -u sarah
40  14  *  *  *   /bin/echo  "hiya"
```

9. Directory Collaboration

--> Create the Directory "/home/shared" with the following characteristics.

--> Group ownership of "/home/shared" should go to the "manager" group.

--> The directory should have full permission for all members of the "manager" group but not to the other users except root. (It is expected that root have full permission).

--> Files created in the future under "/home/shared" should get the same group ownership.

→

```
[root@node1 /]# mkdir /home/shared
[root@node1 /]# chgrp  manager  /home/shared/
[root@node1 /]# chmod 770  /home/shared/
[root@node1 /]# ls -ld /home/shared/
drwxrwx---. 2 root manager 6 Jun 16 22:44 /home/shared/
[root@node1 /]# chmod 2770 /home/shared/
[root@node1 /]# cd /home/shared/
[root@node1 shared]# touch note.txt
[root@node1 shared]# ll
total 0
-rw-r--r--. 1 root manager 0 Jun 16 22:46 note.txt
```

12. Find the string "surd" from "/usr/share/dict/words" file and copy those lines in /root/lines.txt file.

```
[root@node1 shared]# grep -i "surd" /usr/share/dict/words > /root/lines.txt
[root@node1 shared]# cat /root/lines.txt
absurd
absurder
absurdest
absurdism
```

13. Archive & compress for /etc directory under /var/tmp/archive.tar.bz2 format.

```
[root@node1 tmp]# tar -jcvf  /var/tmp/archive.tar.bz2      /etc
```

```
[root@node1 tmp]# ls
archive.tar.bz2
```

or

Archive & compress for /etc directory under /var/tmp/archive.tar.gz format.

```
[root@node1 tmp]# tar -zcvf  /var/tmp/archive.tar.gz      /etc
```

```
[root@node1 tmp]# ls
archive.tar.gz
```

11. Configure autofs

-→ node.net2.example has exported /rhome/remoteuser1 directory using nfs exports and which is remoteuser1's home directory "node.net2.example.com:/rhome/remoteuser1".

--> remoteuser1's home directory should be automounted locally as /rhome/remoteuser1

--> While logging in, only remoteuser1's home directory should be accessible.

--> Set the password for remoteuser1 as "redhat123"

→

```
[root@node1 /]# cd /etc/auto.master.d/
[root@node1 auto.master.d]# vim user.autofs
```

```
/rhome        /etc/sample
~
~
```

```
[root@node1 auto.master.d]# vim /etc/sample
```

```
*   -rw,sync   node.net2.example.com:/rhome/remoteuser1
```

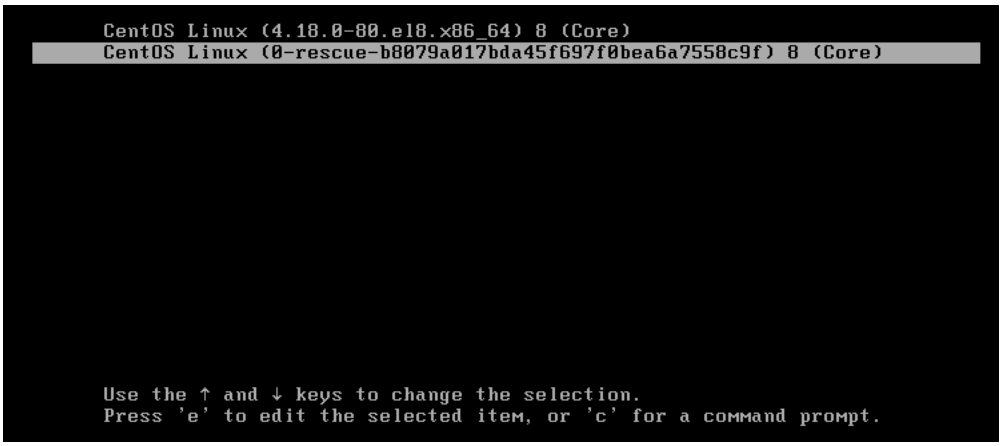
```
[root@node1 auto.master.d]# systemctl restart autofs
[root@node1 auto.master.d]# systemctl enable autofs
[root@node1 auto.master.d]# echo "redhat123" | passwd remoteuser1 --stdin
Changing password for user remoteuser1.
passwd: all authentication tokens updated successfully.
[root@node1 auto.master.d]# su - remoteuser1
Last login: Sun Jun 16 23:37:28 IST 2024 on pts/2
[remoteuser1@node1 ~]$ df -h
Filesystem                                Size  Used Avail Use% Mounted on
devtmpfs                                  656M     0  656M   0% /dev
tmpfs                                     685M     0  685M   0% /dev/shm
tmpfs                                     685M  9.1M  676M   2% /run
tmpfs                                     685M     0  685M   0% /sys/fs/cgroup
/dev/mapper/cs_node1-root                  12G  5.6G  6.0G  49% /
/dev/nvme0n1p1                            495M  236M  259M  48% /boot
tmpfs                                     137M     0  137M   0% /run/user/1001
tmpfs                                     137M     0  137M   0% /run/user/0
node.net2.example.com:/rhome/remoteuser1  9.0G  4.1G  5.0G  46% /rhome/remoteuser1
```

Node 2:

1. **Reset the root password for node2 as “nimsdreg”**

→

Press e



ctrl+x

#mount -o remount,rw /sysroot
#chroot /sysroot
#echo “nimsdreg” | passwd root --stdin
#touch /.autorelabel
#reboot

2. Configure yum repository
http://node.net2.example.com/repo/BaseOS
http://node.net2.example.com/repo/AppStream

→

```
[root@node2 ~]# cd  /etc/yum
yum/          yum.repos.d/
[root@node2 ~]# cd  /etc/yum.repos.d/
[root@node2 yum.repos.d]# ls
exam.repo
[root@node2 yum.repos.d]# vim exam.repo
```

```
[BASEOS]
name = RHEL9.BASEOS
baseurl = http://node.net2.example.com/repo/BaseOS
enabled = 1
gpgcheck = 0

[AppStream]
name = RHEL9.AppStream
baseurl = http://node.net2.example.com/repo/AppStream
enabled =1
gpgcheck =0
```

```
[root@node2 yum.repos.d]# yum repolist  -v
Loaded plugins: builddep, changelog, config-
pletion_cache, needs-restarting, playground,
DNF version: 4.0.9
cachedir: /var/cache/dnf
```

3. Extent the lv "datasource" created using volume group engineering to size 250M. range(230m - 270m) acceptable

→

```
[root@node2 yum.repos.d]# df -h
Filesystem                          Size  Used Avail Use% Mounted on
devtmpfs                            889M     0  889M   0% /dev
tmpfs                               904M     0  904M   0% /dev/shm
tmpfs                               904M  9.1M  894M   2% /run
tmpfs                               904M     0  904M   0% /sys/fs/cgroup
/dev/sda2                           8.0G  3.9G  4.2G  48% /
/dev/mapper/engineering-datasource   35M  2.5M   33M   8% /engineer
```

```
[root@node2 yum.repos.d]# lvextend -L 250M -r  /dev/engineering/datasource
  Rounding size to boundary between physical extents: 252.00 MiB.
  Size of logical volume engineering/datasource changed from 40.00 MiB (10
ts).
  Logical volume engineering/datasource successfully resized.
meta-data=/dev/mapper/engineering-datasource isize=512    agcount=2, agsiz
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=1, sparse=1, rmapbt=0
         =                       reflink=1
```

```
[root@node2 yum.repos.d]# df -h
Filesystem                              Size
devtmpfs                                889M
tmpfs                                   904M
tmpfs                                   904M
tmpfs                                   904M
/dev/sda2                               8.0G
/dev/mapper/engineering-datasource      247M
/dev/sda1                               240M
tmpfs                                   181M
[root@node2 yum.repos.d]#
```

5. Extend the Swap on node 2 by 500M. Do not make changes to exsisting swap
→

7. Configure the system to use the recommended tunning profile
#rpm -qa tuned
#tuned-adm recommend
virtual-guest
#tuned-adm profile virtual-guest
#tuned-adm active
#systemctl enable tuned

EXTRA QUESTIONS

15.1. Configure sudo for group elite so that it's member should have sudo access With no password

→

```
[root@node1 ~]#
[root@node1 ~]# cat  /etc/group  | grep elite
[root@node1 ~]# groupadd elite
[root@node1 ~]# cat  /etc/group  | grep elite
elite:x:4333:
[root@node1 ~]# useradd -G  elite  dolu
[root@node1 ~]# useradd -G  elite  bolu
[root@node1 ~]#
[root@node1 ~]# vim  /etc/sudo
sudo.conf       sudoers         sudoers.d/      sudo-ldap.conf
[root@node1 ~]# vim  /etc/sudoers
[root@node1 ~]# cat  /etc/sudoers  |  grep   elite
  %elite        ALL=(ALL)       NOPASSWD: ALL
[root@node1 ~]# su -
Last login: Wed Jun 26 12:50:09 IST 2024 from 172.24.2.72 on pts/0
[root@node1 ~]# su - dolu
```

#vim /etc/sudoers

```
## Same thing without a password
# %wheel        ALL=(ALL)       NOPASSWD: ALL
  %elite        ALL=(ALL)       NOPASSWD: ALL
```

Qu 2.
To make the all the local user present is the system shoud be passwd expired in 20days

→

```
[root@node1 ~]# vim /etc/log
login.defs      logrotate.conf  logrotate.d/
[root@node1 ~]# vim /etc/login.defs
[root@node1 ~]#
```

```
#       PASS_MAX_DAYS   Maximum number of days a pa
#       PASS_MIN_DAYS   Minimum number of days allo
#       PASS_MIN_LEN    Minimum acceptable password
#       PASS_WARN_AGE   Number of days warning give
#
PASS_MAX_DAYS   30
PASS_MIN_DAYS   0
PASS_MIN_LEN    5
PASS_WARN_AGE   7
```

```
[root@node1 ~]# useradd  -G  elite sonu
[root@node1 ~]# chage  -l   sonu
Last password change                                    : Jun 26, 2024
Password expires                                        : Jul 26, 2024
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 30
Number of days of warning before password expires       : 7
```

Qu. 3 CHANGE PERMISSION 664 TO ALL DIRECTORY to be CREATED for defy user

→

Defy User >> su - defy >> dir 664

7 7 7
6 6 4
---
1 1 3 ← UMASK

```
[root@node1 ~]# su - defy
Last login: Sat Mar  9 02:11:57 IST 2024 on tty1
[defy@node1 ~]$ umask
0002
[defy@node1 ~]$ umask  113
[defy@node1 ~]$ umask
0113
[defy@node1 ~]$
[defy@node1 ~]$ ls -a
.  ..  .bash_history  .bash_logout  .bash_profile  .bashrc
[defy@node1 ~]$ pwd
/home/defy
[defy@node1 ~]$ vim .bashrc
```

```
# User specific aliases and functions
umask 0113
```

Q 4. Create the script file

(a) Create a mysearch script under /root directory to locate files under /usr/share having a size between 5M to 50M.

(b) The files should have the sgid set on them.

(c) After executing the mysearch script file, the listed (searched) files have to be copied under /root/myfiles.

→

#mkdir /root/myfiles

#cd /root/

#vim mysearch

```
#!/bin/bash
find /usr/share -type f -size 100M  -size -200M -perm -4000 -exec cp {} /root/myfiles \;
```

#chmod 777 mysearch

#bash mysearch

4. create a lv share_lv of extent 100 PE.
Volume group vg_share share should be configure as PE to 8MB.
Create the FS of type vfat and should be mounted under mnt/local_share. Mount should be persistance across reboot

Ans -
- fdisk /dev/sdb
Welcome to fdisk (util-linux 2.32.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Command (m for help): n
Partition type
p primary (1 primary, 0 extended, 3 free)
e extended (container for logical partitions)
Select (default p): p
Partition number (default 1): 1
First sector (1026048-6291455, default 1026048):
Last sector, +sectors or +size{K,M,G,T,P} (1026048-6291455, default 6291455): +2048M

Created a new partition 1 of type 'Linux' and of size 500 MiB.

Command (m for help): t
Partition number (default 1): 1
hexcode : 8e #for LVM
:w

-partprobe -s /dev/sdb
- pvcreate /dev/sdb2
- vgcreate -s 8m vg_share dev/vdb2
- lvcreate -l 100 -n lv_share vg_share
- mkfs.vfat dev/vg_share/lv_share
- mkdir mnt/local_share
- make fstab entry
- mount -a