

## **Part 1 (On Node 1 Server)**

### **1. Configuring Networking & Host Names and Name Resolution:**

**Set the hostname node1.network15.example.com and configure the network with ip=172.24.10.10/255.255.255.0, gateway 172.24.10.254 & dns domain with the IP: 172.24.10.254**

#### **Solution:**

```
# hostnamectl set-hostname node1.network15.example.com
# cat /etc/hostname
# nmcli con show
# nmcli con mod "enp0s3" ipv4.addresses "172.24.10.10/24"
# nmcli con mod "enp0s3" ipv4.gateway "172.24.10.254"
# nmcli con mod "enp0s3" ipv4.dns "172.24.10.254"
# nmcli con mod "enp0s3" ipv4.method manual
# nmcli con mod "enp0s3" connection.autoconnect yes
# nmcli con up "enp0s3"
# ip addr show
# route -n
# cat /etc/resolv.conf
```

### **2. Configure your system to use this location as a default repository:**

**http://utility.network15.example.com/BaseOS**

**http://utility.network15.example.com/AppStream**

#### **Solution:**

```
# vim /etc/yum.repos.d/base.repo
[BaseOS]
name = This is the BaseOS repo
baseurl = http://utility.network15.example.com/BaseOS
enabled = 1
gpgcheck = 0
```

```
# vim /etc/yum.repos.d/apps.repo

[AppStream]

name = This is the app stream repo

baseurl = http://utility.network15.example.com/AppStream

enabled = 1

gpgcheck = 0

# yum clean all

# yum repolist
```

### **3. Create the following users, groups and group memberships:**

**i. A group named sharegrp**

**ii. A user harry who belongs to sharegrp as a secondary group**

**iii. A user natasha who also belongs to sharegrp as a secondary group**

**iv. A user copper who does not have access to an interactive shell on the system and who is not a member of sharegrp.**

**v. Harry, natasha and copper should have the password “kexdrams”.**

#### **Solution:**

```
# groupadd sharegrp

# tail /etc/group

# useradd -G sharegrp harry

# tail /etc/passwd

# tail /etc/group

# useradd -G sharegrp natasha

# tail /etc/passwd

# tail /etc/group

# useradd -s /sbin/nologin copper

# tail /etc/passwd

# tail /etc/group

# passwd harry

# passwd natasha

# passwd copper
```

**4. Create collaborative directory /mnt/shares with the following characteristics:**

**i. Group ownership of /mnt/shares should be sharegrp.**

**ii. The directory should be readable, writable and accessible to member of sharegrp but not to any other user. (It is understood that root has access to all files and directories on the system)**

**iii. Files created in /mnt/shares automatically have group ownership set to the sharegrp group.**

**Solution:**

```
# mkdir /mnt/shares
```

```
# ls -ld /mnt/shares
```

```
# chown :sharegrp /mnt/shares
```

```
# ls -ld /mnt/shares
```

```
# chmod 770 /mnt/shares
```

```
# ls -ld /mnt/shares
```

```
# chmod g+s /mnt/shares
```

```
# ls -ld /mnt/shares
```

**5. Copy the file /etc/fstab to /var/tmp. Configure the following permissions on /var/tmp/fstab.**

**i. The file /var/tmp/fstab is owned by root user.**

**ii. The file /var/tmp/fstab is belongs to the root group.**

**iii. The file /var/tmp/fstab should be executable by anyone.**

**iv. The user harry is able to read and write on /var/tmp/fstab.**

**v. The user natasha can neither read or write on /var/tmp/fstab.**

**vi. All other users (Current or future) have the ability to read /var/tmp/fstab.**

**Solution:**

```
# cp /etc/fstab /var/tmp/fstab
```

```
# ls -l /var/tmp/fstab
```

```
# chmod +x /var/tmp/fstab
```

```
# ls -l /var/tmp/fstab
```

```
# setfacl -m u:harry:rw- /var/tmp/fstab
```

```
# getfacl /var/tmp/fstab
```

```
# setfacl -m u:natasha:--- /var/tmp/fstab
# getfacl /var/tmp/fstab
```

**6. Find all lines in the file /usr/share/mime/packages/freedesktop.org.xml that contain the string ich. Put a copy of these lines in the original order in the file /root/lines. /root/lines should contain no empty lines and all lines must be exact copies of the original lines in /usr/share/mime/packages/freedesktop.org.xml**

**Solution:**

```
# grep ich /usr/share/mime/packages/freedesktop.org.xml > /root/lines
# ls -l /root/lines
# cat /root/lines
```

**7. Find all the files owned by user “alex” and redirect the output to /home/alex.**

**Solution:**

```
# mkdir /home/alex
# find / -user alex > /home/alex
# ls -l /home/alex
```

**8. Create a user fred with a user ID 3945. Give the password kexdrams.**

**Solution:**

```
# useradd -u 3945 fred
# tail /etc/passwd
# passwd fred
```

**9. Search the string “john” in the /etc/passwd file and save the output in /root/strings.**

**Solution:**

```
# grep john /etc/passwd > /root/strings
# ls -l /root/strings
# cat /root/strings
```

**10. Configure your system so that it is an NTP client of utility.network15.example.com.**

**Solution:**

```
# yum install chronyd -y
# systemctl enable --now chronyd
```

```
# vim /etc/chrony.conf
*** Content omitted ***
pool utility.network15.example.com iburst
*** Content omitted ***

# systemctl restart chronyd

# chronyc sources -v
```

**11. The user andrew must configure a cron job that runs in every 3 minutes and executes logger**

**“RHCSA EXAM”**

**Solution:**

```
# systemctl status crond
# systemctl enable --now crond
# crontab -e -u andrew
*/3 * * * * logger "RHCSA EXAM"
# crontab -l -u andrew
# tail -f /var/log/cron
```

**12. Configure autofs to automount the home directories of user remoteuser15. Note the following:**

**i. utility.network15.example.com (172.24.10.10), NFS-exports /netdir to your system, where user is remoteuser15**

**ii. remoteuser15’s home directory is utility.network15.example.com:/netdir/remoteuser15**

**iii. remoteuser15’s home directory should be auto mounted locally beneath /netdir as**

**/netdir/remoteuser15**

**iv. Home directories must be writable by their users while you are able to login as any of the remoteuser15 only home directory that is accessible from your system.**

**Solution:**

```
# yum install autofs -y
# systemctl enable --now autofs
# vim /etc/auto.master.d/nasir.autofs
/netdir /etc/nasir.demo
```

```
# vim /etc/nasir.demo
*      -rw, sync    utility.network15.example.com:/netdir/&
# systemctl restart autofs
```

**13. Create a tar names archive /root/archive.tar.gz which contain the contain of /usr/local. The tar archive must be compressed using bzip.**

**Solution:**

```
# tar -cvjf /root/archive.tar.bz2 /usr/local
# ls -l /root/archive.tar.bz2
```

**14. You will configure a web server running on your system serving content using a non-standard port (82).**

**Solution:**

```
# systemctl status httpd
# systemctl restart httpd
# man semanage port
# semanage port -a -t http_port_t -p tcp 82
# firewall-cmd --permanent --add-port=82/tcp
# firewall-cmd --reload
# systemctl restart httpd
```

**Part 2 (On Node 2 Server)**

**1. Interrupt the boot process and reset the root password. Change it to “kexdrams” to gain access to the system.**

**Solution:**

```
Reboot (Ctrl + Alt + Del)
e
rd.break
ctrl + x
# mount -o remount,rw /sysroot
# chroot /sysroot
# passwd root
# touch /.autorelabel
# exit
```

# exit

## **2. Configure your system to use this location as a default repository:**

**http://utility.network15.example.com/BaseOS**

**http://utility.network15.example.com/AppStream**

### **Solution:**

```
# vim /etc/yum.repos.d/base.repo
```

```
[BaseOS]
```

```
name = This is the BaseOS repo
```

```
baseurl = http://utility.network15.example.com/BaseOS
```

```
enabled = 1
```

```
gpgcheck = 0
```

```
# vim /etc/yum.repos.d/apps.repo
```

```
[AppStream]
```

```
name = This is the app stream repo
```

```
baseurl = http://utility.network15.example.com/AppStream
```

```
enabled = 1
```

```
gpgcheck = 0
```

```
# yum clean all
```

```
# yum repolist
```

## **4. Create a new volume group in the name of datavg and physical volume extent is 16 MB. Create a**

**new logical volume in the name of datacopy with the size of 50 extents and file system  
must ext4**

**then the logical volume should be mounted automatically mounted under /datasource at  
system**

**boot time.**

### **Solution:**

```
# lsblk
```

```
# fdisk /dev/sda
```

```
F
```

```
n
```

```
e
Enter
Enter
n
Enter
+1.5G
t
Enter
L
8e
w
# reboot
# pvcreate /dev/sda5
# vgcreate --help
# vgcreate -s 16M datavg /dev/sda5
# vgdisplay datavg
# lvcreate -n datacopy -L 800M datavg
# lvdisplay datacopy
# mkfs.ext4 /dev/datavg/datacopy
# mkdir /datasource
# vim /etc/fstab
# systemctl daemon-reload
# mount -a
```

### **3. Resize the logical volume, datacopy and increase the filesystem by 400MB**

**i. Make sure the the filesystem contents remain intact**

**ii. (Note: partitions are seldom exactly the size requested, so anything within the range of 1100 MB to 1300 MB is acceptable)**

#### **Solution:**

```
# lvextend --help
# lvextend -L +400M /dev/datavg/datacopy
```



```
# resize2fs /dev/datavg/datacopy
```

```
# df -h
```

**5. Add an additional swap partition of 756 MiB to your system. The swap partition should automatically mount when your system boots. Do not remove or otherwise alter any existing swap partition on your system.**

**Solution:**

```
# swapon --show
```

```
# free -m
```

```
# lsblk
```

```
# fdisk /dev/sda
```

```
F
```

```
n
```

```
Enter
```

```
+756M
```

```
t
```

```
Enter
```

```
L
```

```
82
```

```
p
```

```
w
```

```
# mkswap /dev/sda7
```

```
# swapon /dev/sda7
```

```
# free -m
```

```
# swapon --show
```

```
# vim /etc/fstab
```

```
# systemctl daemon-reload
```

```
# mount -a
```

**6. Add a new disk to your virtual machine with a size of 10 GiB. On this disk, create a VDO volume with a size of 50 GiB and mount it persistently on /vbread with xfs filesystem.**

**Solution:**

```
# yum install vdo kmod-kvdo
# systemctl enable --now vdo
# vdo create --name=vdo1 --device=/dev/vdd --vdoLogicalSize=50G
# vdo status --name=vdo1
# mkfs.xfs -K /dev/mapper/vdo1
# udevadm settle
# mkdir /vbread
# mount /dev/mapper/vdo1 /vbread
# vim /etc/fstab
# systemctl daemon-reload
# mount -a
```

**7. Set your server to use the recommended tuned profile.**

**Solution:**

```
# systemctl status tuned
# systemctl enable --now tuned
# tuned-adm active
# tuned-adm recommend
# tuned-adm profile virtual-guest
# tuned-adm active
```