++++++++++++++++++++
+ RHCEv8 +
+ RHCSA-EX200 +
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Important Instructions, read carefully.

- Total number of Questions = 20
- You have 2VMs, servera & serverb
- In **servera** root password already set, just need to re-config network parameters but in **serverb** password must be change with new provided password but network is ready.
- NTP need to be configured in only one system not both.
- YUM Repository need to configured in both systems.
- There is not any question to configure LDAP client. it is already configured, just need to configure auto-mounting for LDAP user's home DIR in one system. (follow same steps as RHEL7)
- Firewall and SELinux both will be pre-enabled.

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servera

Don't run ssh to **servera**, it has network issue. first use view vm and fix network issue, then run ssh from physical host to servera.

Q1. Configure network and set the static hostname.

hostname =servera.lab.example.com
ip-address =172.25.250.10
subnetmask =255.255.255.0
gateway =172.25.250.254
dns =172.25.254.254
dns-serach =lab.example.com

NOTE: on **servera** nmcli connection is available but without parameters like ip/mask, dnc, gw, dns-serach

solution

```
[root@servera ~]# hostname
[root@servera ~]# hostnamectl set-hostname servera.lab.example.com
[root@servera ~]# ifconfig
[root@servera ~]# nmcli connection show
[root@servera ~]# grep "BOOTPROTO" /etc/sysconfig/network-scripts/ifcfg-Wired_connection_1
[root@servera ~]# ifconfig
[root@servera ~]# ip route
[root@servera ~]# cat /etc/resolv.conf
[root@servera ~]# nmcli connection modify "Wired connection 1" ipv4.addresses "xxxxxx/x" ipv4.gateway "xxxxxx" ipv4.dns "xxxxxx" ipv4.dns-search
"xxxx" ipv4.method manual
[root@servera ~]# nmcli connection reload
[root@servera ~]# ifconfig
```

Q2. Configure YUM repository with the 2given links (BaseOs and AppStream)

BaseOs: http://content.example.com/rhel8.0/x86_64/dvd/BaseOS
AppStream: http://content.example.com/rhel8.0/x86_64/dvd/AppStream

solution

```
[root@servera ~]# yum repolist
No repositories available
[root@servera ~]# vim /etc/yum.repos.d/rhel.repo
[BaseOs]
name=BaseOs
baseurl=http://content.example.com/rhel8.0/x86_64/dvd/BaseOS
gpgcheck=0
enabled=1
[AppStream]
name=AppStream
baseurl=http://content.example.com/rhel8.0/x86_64/dvd/AppStream
gpgcheck=0
enabled=1
:wq
```

verify:

```
[root@servera ~]# yum repolist
```

Q3. Debug SELinux:

Web server running on non-standard port “82” is having issues serving content. Debug and fix the issues.

-The web server can server all the existing HTML files from '/var/www/html', Don't make any changes to these files.

-Web service should automatically start at boot time.

solution

```
[root@servera ~]# getenforce
Enforcing
[root@servera ~]# yum list httpd
[root@servera ~]# systemctl is-enabled httpd.service
[root@servera ~]# systemctl enable httpd.service
[root@servera ~]# systemctl status httpd.service
[root@servera ~]# firewall-cmd –list-all
ports: 82/tcp
[root@servera ~]# vim /etc/httpd/conf/httpd.conf
go to line number45
#Listen 80
Listen 82
:wq
[root@servera ~]# semanage port -l | grep "http"
http_port_t      tcp      80, 81, 443, 488, 8008, 8009, 8443, 9000
[root@servera ~]# semange port -a -t httpd_port_t -p tcp 82
[root@servera ~]# semanage port -l | grep "http"
http_port_t      tcp      82, 80, 81, 443, 488, 8008, 8009, 8443, 9000
[root@servera ~]# systemctl restart httpd.service
```

verify:

open one firefox browser, on the address-bar type:

servera.lab.example.com:82

or

```
[root@servera ~]# curl servera.lab.example.com:82
 This is my web server
```

Q4. Create User accounts with supplementary group.

-group:

sysadms

-users:

natasha

harry

sarah (with nologin shell)

-natasha and harry should be the member of sysadms group.

-password for all users should be "trootent"

solution

```
[root@servera ~]# grep "sysadmin" /etc/group
[root@servera ~]# groupadd sysadmin
[root@servera ~]# id harry
[root@servera ~]# id natasha
[root@servera ~]# id sarah
[root@servera ~]# useradd -G sysadmin natasha
[root@servera ~]# useradd -G sysadmin harry
[root@servera ~]# grep "sysadmin" /etc/group
sysadmin:x:1001:natasha,harry
[root@servera ~]# useradd -G sysadmin -s /sbin/nologin sarah
[root@servera ~]# groupmems -lg sysadmin
natasha  harry  sarah
[root@servera ~]# echo "trootent" | passwd --stdin harry
[root@servera ~]# echo "trootent" | passwd --stdin natasha
[root@servera ~]# echo "trootent" | passwd --stdin sarah
```

Q5. Cron Job

-Configure a cron job that runs every 1minutes and executes: logger "EX200 in progress" as the user natasha.

-Configure a cron job for user "natasha", cron must runs daily at 2:23pm and inside executes the /usr/bin/echo "welcome".

solution

```
[root@servera ~]# systemctl status crond.service
[root@servera ~]# systemctl restart crond.services
[root@servera ~]# crontab -eu natasha
*/1 * * * * logger "EX200 in progress"
23 14 * * * /usr/bin/echo "welcome"
:wq!
[root@servera ~]# crontab -lu natasha
```

verify:

```
[root@servera ~]# tail -f /var/log/messages
Nov  5 14:42:01 servera natasha[2219]: EX200 in progress
```

Q6. Create a collaborative DIR. (change group owner, set the permissions along with sgid)

-Create the Directory "/home/sysadms" with the following characteristics.

-Group ownership of "/home/sysadms" should go to "sysadms" group.

-The directory should have full permission for all members of "sysadms" group but not to the other users except "root".

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

solution

```
[root@servera ~]# mkdir /home/sysadms
[root@servera ~]# ls -ld /home/sysadms
[root@servera ~]# chgrp sysadms /home/sysadms
[root@servera ~]# chmod 2770 /home/sysadms
[root@servera ~]# touch /home/sysadms/file1.txt
[root@servera ~]# ls -l /home/sysadms/file1.txt
```

Q7. Configure NTP

chrony server is "classroom.example.com"

solution

```
[root@servera ~]# systemctl status chronyd.service
[root@servera ~]# systemctl restart chronyd.service
[root@servera ~]# timedatectl
[root@servera ~]# vim /etc/chrony.conf
**hash line number 3 till 6 and write your question’s ntp server name**
#server 0.rhel.pool.ntp.org iburst
#server 1.rhel.pool.ntp.org iburst
#server 2.rhel.pool.ntp.org iburst
#server 3.rhel.pool.ntp.org iburst
server classroom.example.com iburst
:wq!
[root@servera ~]# systemctl restart chronyd.service
[root@servera ~]# timedatectl
# chronyc sources -v
```

Q8. Configure AutoFS (NFS vers=4.0, so explicitly don't need to mention in auto.map file)

-NfS vers=4.0 exports the **/home/guests** to your system where "**X**" is your station number.

-ldapuser's home directory is **classroom.example.com:/home/guests/ldapuserX**

-ldapuser's home directory should be automounted locally beneath at **/home/guests/ldapuserx**

-while login with any of the ldapuser then only home directory should accessible from your system that ldapuserX

solution

```
[root@servera ~]# getent passwd ldapuserX
[root@servera ~]# su – ldapuserX
[root@servera ~]# yum install autofs.x86_64 -y
[root@servera ~]# systemctl enable autofs.service
[root@servera ~]# systemctl start autofs.service
[root@servera ~]# vim /etc/auto.master
/home/guests                /etc/auto.misc
:wq!
[root@servera ~]# vim /etc/auto.misc
ldapuserX          -fstype=rw,nfs,vers=4.0          classroom.example.com:/home/guests/ldapuserX
:wq!
[root@servera ~]# systemctl restart autofs
```

verify:

```
[root@servera ~]# chmod 777 /home/gusts
[root@servera ~]# su – ldapuserX
[ldapuserX@serverX ~]$ pwd
/home/guests/ldapuserX
```

NOTE: it’s better to set 777 permission for /home/guests

Q9. copy ‘/etc/fstab’ file to ‘/var/tmp/’ then configure ‘/var/tmp/fstab’ file permissions with ACL

- -The file /var/tmp/fstab should owned by the "root".
- -The file /var/tmp/fstab should belongs to the group "root".
- -The file /var/tmp/fstab should not be executable by any one.
- -The user "sarah" should able to read and write to the file.
- -The user "harry" can neither read nor write to the file.
- -Other users (future and current) shuold be able to read /var/tmp/fstab.

solution

```
[root@servera ~]# cp /etc/fastab /var/tmp/fstab
[root@servera ~]# ls -l /var/tmp/fstab
[root@servera ~]# setfacl -m u:sarah:rw,u:harry:- /var/tmp/fstab
[root@servera ~]# getfacl /var/tmp/fstab
```

Q10. Create user 'bob' with 2112 uid and set the password 'trootent'

solution

```
[root@servera ~]# id bob
[root@servera ~]# useradd -u 2112 bob
[root@servera ~]# echo "trootent" | passwd --stdin bob
[root@servera ~]# id bob
uid=2112(bob) gid=2112(bob) groups=2112(bob)
[root@servera ~]# passwd -S bob
```

Q11. Locate all files owned by user 'harry' and copy it under '/root/harry-files'

solution

```
[root@servera ~]# id harry
uid=1002(harry) gid=1003(harry) groups=1003(harry),1001(sysadmin)
[root@servera ~]# ls /
[root@servera ~]# mkdir /root/harry-files
[root@servera ~]# find / -user harry -exec cp -rvfp {} /root/harry-files \;
[root@servera ~]# ll -a /root/harry-files
```

Q12. Find a string 'ich' from '/usr/lib/mem/ex200/samplefile.txt' and put it into '/root/lines' file.

solution

```
[root@servera ~]# grep "ich" /usr/lib/mem/ex200/samplefile.txt >/root/lines
[root@servera ~]# cat /root/lines
```

Q13.create an archive '/root/backup.tar.bz2' of '/usr/local' dir and compress it with bzip2.

solution

```
[root@servera ~]# tar cfvj /root/backup.tar.bz2 /usr/local
[root@servera ~]# ll /root
[root@servera ~]# tar tfvj backup.tar.bz2
```

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serverb

Important Instructions, read carefully.

In serverb 3disks will be available.

-/dev/vda: for ROOT filesystem (don't do anything under this Disk)

-/dev/vdb: You need to use for Swap and LVM Partition.

-/dev/vdc: Will be used for Stratis/VDO.

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Q14. Reset root user password and make it 'trootent'

solution

reboot server2

press 'e' when kernel lines appear

findout 'linux' line and press 'end' key

press 'space key' and write rd.break console=tty0

press Ctrls+x and continue

mount -o remount,rw /sysroot/

chroot /sysroot/

passwd root

Type NewPass: trootent

Retype NewPass: trootent

touch /.autorelabel

exit

exit

login to serverb

serverb login: root

Password: "type new password"

[root@serverb ~]# hostname

[root@serverb ~]# nmcli connection show

[root@serverb ~]# grep "BOOTPROTO" /etc/sysconfig/network-scripts/ifcfg-Wired_connection_1

BOOTPROTO=none

[root@serverb ~]# ifconfig

NOTE: test the ssh connection to serverb.lab.example.com and continue the answering the questions

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Q15. Configure YUM Repos (BaseOs and AppStream)

BaseOs: http://content.example.com/rhel8.0/x86_64/dvd/BaseOS

AppStream: http://content.example.com/rhel8.0/x86_64/dvd/AppStream

solution

[root@serverb ~]# yum repolist

[root@serverb ~]# vim /etc/yum.repos.d/rhel.repo

[BaseOs]

name=BaseOs

baseurl=http://content.example.com/rhel8.0/x86_64/dvd/BaseOS/

gpgcheck=0

enabled=1

[AppStream]

name=AppStream

baseurl=http://content.example.com/rhel8.0/x86_64/dvd/AppStream/

gpgcheck=0

enabled=1

:wq

verify:

[root@serverb ~]# yum repolist

Q16. Resize the logical volume "mylv". after reboot size should be in between 200MB to 300MB

solution

[root@serverb ~]# pvs

[root@serverb ~]# vgs

[root@serverb ~]# lvs

[root@serverb ~]# df -hT

[root@serverb ~]# lvextend -L 250M /dev/myvg/mylv

[root@serverb ~]# lvs

[root@serverb ~]# resize2fs /dev/mapper/myvg-mylv or [root@serverb ~]# resize2fs /mnt/mylv/

[root@serverb ~]# df -hT

Q17. Add a swap partition of 512MB and mount it permanently.

solution

```
[root@serverb ~]# free -m
[root@serverb ~]# swapon -s
[root@serverb ~]# fdisk /dev/vdb
p
n
e
enter
enter
enter
p
n
l
enter
enter
+512M
p
t
select new partition number (5)
82
p
w
[root@serverb ~]# partprobe
[root@serverb ~]# mkswap /dev/vdb5
[root@serverb ~]# vim /etc/fstab
[root@serverb ~]# UUID=e5a95dd4-0417-4229-a499-92b29fe9f201 swap swap defaults 0 0
[root@serverb ~]# mount -a
[root@serverb ~]# swapon /dev/vdb5
[root@serverb ~]# free -m
[root@serverb ~]# swapon -s
```

Q18. Create a logical Volume and mount it permanently.

- Create the logical volume with the name "wshare" by using 50PE's from the volume group "wgroup".
- Consider each PE size of volume group as "8MB".
- Mount it on '/mnt/wshare' with file system vfat.

solution

```
[root@serverb ~]# fdisk /dev/vdb
p
n
l
enter
enter
+1024M
p
t
select new partition number (6)
8e
p
w
[root@serverb ~]# partprobe
[root@serverb ~]# pvcreate /dev/vdb6
[root@serverb ~]# vgcreate -s 8M wgroup /dev/vdb6
[root@serverb ~]# vgdisplay
[root@serverb ~]# lvcreate -n wshare -l 50 wgroup
[root@serverb ~]# lvs
[root@serverb ~]# mkfs -t vfat /dev/mapper/wgroup-wshare
[root@serverb ~]# blkid
[root@serverb ~]# mkdir /mnt/wshare
[root@serverb ~]# echo "UUID=1902-BFCE /mnt/wshare vfat defaults 0 0" >>/etc/fstab
[root@serverb ~]# mount -a
[root@serverb ~]# df -hT
```

Q19. Create a new STRATIS volume according to following requirements:

STRATIS

-Use the un-partitioned disk

-The volume is named 'stratisfs' belongs to 'stratispool'

-The volume must be mounted permanent under '/stratisvolume'

-Place a copy of the file "http://content.example.com/file.txt" under '/stratisvolume'

-Take a snapshot of 'stratisfs' named 'stratissnap'.

VDO

-Create the VDO volume labvdo, with the device /dev/vdd.

-Set its logical size to 50GB.

-Mount the volume labvdo on /labvdovol with the XFS file system so that it persists across reboots.

-Create three copies of the file named /root/install.img on the volume labvdo.

-Compare the statistics of the volume to verify the data deduplication and compression happening on the volume

An19-stratis

```
[root@serverb ~]# yum list stratis*
[root@serverb ~]# yum install stratis-cli.noarch stratisd.x86_64 -y
[root@serverb ~]# systemctl list-unit-files | grep "stratis"
[root@serverb ~]# systemctl enable --now stratisd.service
[root@serverb ~]# systemctl start stratisd.service
[root@serverb ~]# stratis pool create stratispool /dev/vdc
[root@serverb ~]# stratis pool list
[root@serverb ~]# stratis blockdev list
[root@serverb ~]# stratis filesystem create stratispool stratisfs
[root@serverb ~]# stratis filesystem list
[root@serverb ~]# mkdir /stratisvolume
[root@serverb ~]# blkid
[root@serverb ~]# mount -a
[root@serverb ~]# df -hT
[root@serverb stratis]# cd /stratisvolume/
[root@serverb stratisvolume]# wget http://content.example.com/file.txt
[root@serverb stratisvolume]# stratis filesystem snapshot stratispool stratisfs stratissnap
[root@serverb stratisvolume]# stratis filesystem list
```

An19-vdo

```
[root@serverb ~]# yum list vdo*
[root@serverb ~]# yum list kmod*
[root@serverb ~]# yum install vdo.x86_64 kmod* -y
[root@serverb ~]# vdo create --name=labvdo --device=/dev/vdd --vdoLogicalSize=50G
Creating VDO labvdo
Starting VDO labvdo
Starting compression on VDO labvdo
VDO instance 0 volume is ready at /dev/mapper/labvdo
[root@serverb ~]# vdo list
[root@serverb ~]# vdostats labvdo
[root@serverb ~]# vdo status --name=labvdo
[root@serverb ~]# vdo status --name=labvdo | grep "Compression"
    Compression: enabled
[root@serverb ~]# vdo status --name=labvdo | grep "Deduplication"
    Deduplication: enabled
[root@serverb ~]# mkfs.xfs -K /dev/mapper/labvdo
[root@serverb ~]# udevadm settle
[root@serverb ~]# mkdir /labvdovol
[root@serverb ~]# blkid
/dev/mapper/labvdo: UUID="420d2f4f-144d-49bb-a1b5-ead77623dc3f" TYPE="xfs"
[root@serverb ~]# vim /etc/fstab
UUID=420d2f4f-144d-49bb-a1b5-ead77623dc3f /labvdovol xfs defaults,x-systemd.requires=vdo.service 0 0
:wq!
[root@serverb ~]# mount -a
[root@serverb ~]# vdostats --human-readable
[root@serverb ~]# cp /root/install.img /labvdovol/install.img
[root@serverb ~]# vdostats --human-readable
[root@serverb ~]# cp /root/install.img /labvdovol/install.img.1
[root@serverb ~]# vdostats --human-readable
[root@serverb ~]# cp /root/install.img /labvdovol/install.img.2
[root@serverb ~]# vdostats --human-readable
```

Q20. Configure System Tuning:

-Choose the recommended 'tuned' profile for your system and set it as the default.

solution

```
[root@serverb ~]# yum list tune*
[root@serverb ~]# yum install tuned.noarch
[root@serverb ~]# syatemctl enable --now tuned.service
[root@serverb ~]# syatemctl start tuned.service
[root@serverb ~]# tuned-adm list
[root@serverb ~]# tuned-adm active
Current active profile: balanced
[root@serverb ~]# tuned-adm recommend
virtual-guest
[root@serverb ~]# tuned-adm profile virtual-guest
[root@serverb ~]# tuned-adm active
Current active profile: virtual-guest
```

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