RHEL 8 (RHCSA Preparation)

Guidelines:

- ✓ Once you receive access link, proctor will give you instructions and then start the exam.
- ✓ Now once Proctor mention starting exam, exam time countdown starts for 3.5Hr.
- ✓ In Remote exam copy-paste does not work (New Remote Exam/Kiosk Setup it works)
- ✓ To access VMS click on activities --> Redhat LOGO --> It will give you browser where you can get Configuration Information and Exam Questions.
- ✓ To start VM click on VM-EXAM Control --> Node1/Node2 --> Console access
- ✓ Before attempting questions read **configuration Information** (Link Given) carefully.
- ✓ In Additional Information root password given.(e.g. ringogee)
- ✓ Repository path is also given in additional Information.
- ✓ For storage Management 3 disk given on node2
  - I. /dev/vda --> /dev/vda1 is lvm mounted on /boot and /dev/vda2 mounted on / (use this for swap)
  - II. /dev/vdb --> /dev/vdb1 is lvm as /dev/myvol/vo (It will use for extend or reduce or for new volume purpose)
  - III. /dev/vdc is a empty disk (It will use for VDO question)
- ✓ First section-13 questions , Second Section-8 questions

Node1 :

i. Root Password break (Use ctr-alt-del in right side corner to reboot the system)
ii. Yum repository (Two repos)
iii. Network Configuration(All information given)
Note: One static ip is already exist. Do not remove it.

Node2:

All above i, ii, questions. Network Setup not required. (All Network Setup is already exist)

Exam Configuration:

2 VM (X Is Your Foundation Number)

Node1.domainX.example.com	172.24.X.5
Node2.domainX.example.com	172.24.X.6
DomainX.example.com	172.24.X.0
Netmask	255.255.255.0
Gateway	172.24.X.254
DNS	172.24.X.254

Set Root password of node1.domainX.example.com as ringogee. Password for

node2.domainX.example.com is ringogee.

Password reset:

1. Reboot the system.
2. Interrupt the boot loader countdown by pressing any key, except Enter.
3. Remove console=tty0 console=ttyS0 (here only, not in exam)
4. rd.break With that option, the system breaks just before the system hands control
5. Press Ctrl+x to boot with the changes.

```
mount -o remount,rw /sysroot chroot /sysroot
passwd root
touch /.autorelabel exit
exit
```

Section - 1

Questions :

1. Network Setup

Node1.domainX.example.com	172.24.X.5
Netmask	255.255.255.0
Gateway	172.24.X.254
DNS	172.24.254.254

Ans:

nmcli conn show

ifconfig ; # ip addr show

nmcli connection modify "connection name" ipv4.addresses 172.24.X.5/24 gw4 172.24.5.254 ipv4.dns 172.24.254.254 ipv4.method manual

hostnamectl set-hostname node1.domain.example.com

systemctl restart network (if this not work)

nmcli conn reload ; nmcli conn down <interface-name> ; nmcli conn up <interface_name>

From your base System take access of your VM:
ssh root@node1.domainX.example.com

2. Create default yum Repos

Repo1link.....

Repo2link.....

Ans:

#cd /etc/yum.repos.d

vim rhel.repo

[BaseOS]

name= RedHat Enterprise Linux 8.0 BaseOS

baseurl = http://<link_given>/BaseOS

enabled=1

gpgcheck=0

[AppStream]

name= RedHat Enterprise Linux 8.0 AppStream

baseurl = http://<link_given>/AppStream

enabled=1

gpgcheck=0

:wq

yum clean all

yum update all

yum repolist

yum install httpd -y (Testing Purpose)

4. User/Group management

- A group named sysadmins
- A user natasha who belongs to sysadmins as a secondary group.
- A user harry who also belongs to sysadmins as a secondary group.
- A user sarah who does not have access to an interactive shell on the system, and who is also not a member of sysadmins group.
- natasha, harry, and sarah should all have the password of postroll.

Ans.
```
groupadd sysadmins
useradd -G sysadmins natasha
useradd -G sysadmins harry
useradd -s /sbin/nologin/ sarah
echo "postroll" | passwd --stdin natasha
echo "postroll" | passwd --stdin harry
echo "postroll" | passwd --stdin sarah
```

5. Node1 would configure the automounter such that remoteuserX having home directory /rhome/remoteuserX gets mounted automatically upon login. The NFS share would be utility.domainX.example.com:/rhome/remoteuserX.

Ans: # yum install autofs -y
vim /etc/auto.master
/- /etc/auto.misc
getent passwd remoteuser4
vim /etc/auto.misc
<homedirectory of remoteuser4 > -rw,sync,fstype=nfs4
utility.domain5.example.com:/rhome/remoteuser5
systemctl restart autofs; systemctl enable autofs
su - remoteuser5

6. Locate all file of user student on your system and save the list of all files in /var/liststationx

Ans. mkdir /var/liststationx
find / -user student -exec cp -avp {} /var/liststationx/ \;

8. The user Natasha must configure a cron job that runs daily at 06:25 local time and executes /bin/echo "Hello Test"

Ans. # crontab -eu natasha
25 06 * * * /bin/echo Hello_World
systemctl restart crond

crontab -lu natasha → to check crontab job for natasha

If ask same question but every minute

*/1 06 * * * /bin/echo Hello_World

9. Copy the file /etc/fstab to /var/tmp. Configure the permissions of /var/tmp/fstab so that:

- the file /var/tmp/fstab is owned by the root user.
- the file /var/tmp/fstab belongs to the group root.
- the file /var/tmp/fstab should not be executable by anyone.
- the user Natasha is able to read and write /var/tmp/fstab.
- the user harry can neither write nor read /var/tmp/fstab.
- all other users (current or future) have the ability to read /var/tmp/fstab.

Ans. cp /etc/fstab /var/tmp/
setfacl -m u:natasha:rw- /var/tmp/fstab
setfacl -m u:harry:--- /var/tmp/fstab
setfacl -m o::r-- /var/tmp/fstab
getfacl /var/tmp/fstab

10. Configure your system so that it is an NTP client of classroom.example.com

Ans.

vim /etc/chrony.conf

put # before earlier servers
server classroom.example.com iburst
:wq
systemctl restart chronyd.service
timedatectl → to check ntp synchronised or not
chronyc sources -v

```
.-- Source mode '^' = server, '=' = peer, '#' = local  clock.
/ .- Source state '*' = current synced, '+' = combined , '-' = not combined,
| / '?' = unreachable, 'x' = time may  be in error, '~' = time too variable.
||                .- xxxx [ yyyy ] +/- zzzz
||                / xxxx = adjusted offset,
||   Log2(Polling interval) -.             | yyyy = measured offset,
||           \       | zzzz = estimated error.
||            |    |
MS Name/IP address      Stratum Poll Reach LastRx Last sample
===============================================================================
^* classroom.example.com        8   6    17     3  +1783ns[ +133us] +/-  265us
```

11. **Create a user stationX on you system which has no login to your system having user id to 1088**.

Ans. useradd -u 1088 -s /sbin/nologin stationX

12. Create a /my_backup.tar.gz file having data as located on /usr/local

Ans. tar -cvzf /my_backup.tar.gz /usr/local
(.gz means gunzip - z) (.bz2 means bunzip - j) (.xz means xzip - J)

13. Find the word starts with ich from the file given in the /usr/share/dict/words and copy those lines to /roo/result.txt

Ans. grep ^ich /usr/share/dict/words > /root/result.txt

14. **Apache Service is not responding on port 18989/tcp on alpha.domainX.example.com. Make system can listen on port 18989/tcp**.

Ans.

semanage port -l | grep http
vim /etc/httpd/conf/httpd.conf
/Listen (search line)
Listen 80
Listen 18989 (add line)
systemctl restart httpd
systemctl enable httpd → Do not forget to enable
semanage port -a -t http_port_t -p tcp 18989
firewall-cmd --permanent --add-port=18989/tcp
firewall-cmd --reload
firewall-cmd --list-all
semanage port -l | grep http
firefox http://yourfulldomainname:18989
(To check its working or not, must use -X at the time of ssh)

Section – 2

Note: Break root password as given in Additional Configuration. Do not touch Network Settings of Node2

1. **Configure repo for BaseOS and AppStream repository**
2. **Extend a swap partition upto 512M. Make sure it is auto mounted after the reboot**

Ans.

```
# free -h
#  lsblk
# fdisk /dev/vdb

        P       (print partitions)
        n       (new)
                First Sector <Enter>
                Last Sector - +512M
        t → 82
        w (save)
# partprobe
# lsblk
# mkswap /dev/vdb2
# blkid
→ copy UUID
# vim /etc/fstab
   UUID=" " swap swap defaults 0 0
:wq
# swapon –a
#   swapon –s
#  df -h
# free –h
```

3. Resize logical volume (Name Given e.g "mylv") upto 800M. It would be able to save the data between 765MB - 800MB.

```
# df –h
# lvdisplay
# lvextend –L 800M /dev/myvg/mylv
#  resize2fs  –f /dev/myvg/mylv
#  lvdisplay
# df –h
```

4. Create the new logical volume "datastore" inside volume group "database" with the following keynotes –

- The logical volume should be of 50 extends, Volume group physical extent size must be 16 MB

- It should be mounted under /common/classes with vfat (automount after reboot).

Ans:

```
# fdisk  /dev/vdb
  create one partition of size 1 GB & change type '8e'
# pvcreate /dev/vdb3
# vgcreate -s 16M  database /dev/vdb5
# lvcreate -n datastore -l 50  database
   or lvcreate –n datastore –L 800M
# mkfs.vfat /dev/database/datastore
# mkdir /common/classes
  # vim  /etc/fstab
/dev/mapper/database/datastore   /common/classes     ext4   defaults 0 0
 :wq
# mount -a
# df -h
```

5. Create a VDO named vdo1 using empty disk. Give xfs file system to the mapper /dev/mapper/vdo1. Mount it to /datadisk (mount must be available after reboot)

Ans:-

```
# lsblk
#yum  install vdo  kmod-kvdo -y
# systemctl enable  vdo
# systemctl start  vdo
# vdo  create  --name=vdo1 --device=/dev/vdc --vdoLogicalSize=50G
# vdo  list
# mkdir /datadisk
# mkfs.xfs -K /dev/mapper/vdo1
# blkid  => copy UUID consist /dev/mapper/vdo1
# vim  /etc/fstab
  /dev/mapper/vdo1 /datadisk xfs   defaults,x-systemd.requires=vdo.service  0  0
:wq

# mount -a
# df -h
```

6. Change the Tuned profile to the appropriate profile as mentioned in Recommended.

Ans:- yum install tuned -y
systemctl enable tuned
systemctl start tuned
tuned-adm list
tuned-adm recommend
tuned-adm active
tuned-adm profile virtual-guest

7. Create a /srv/web directory and extract the /home/containers/web-content.gz archive in it. And Configure the directory so that a rootless container can use it for persistent storage. Install Container-tools.

Ans:

```
# mkdir -pv  /srv/web ; cd /srv/web
# tar -xvzf  /home/containers/web-content.gz
# ls  --> html directory
# chown -R containers:  /srv/web
#  ls -ld  /srv/web
# yum module install container-tools -y ; yum install podman -y
```

8. Deploy Container :

- **Using containers user, create a detached Apache HTTP server container named web.**
- **Use the rhel8/httpd-24 image with the tag 1-105 from the registry.lab.example.com registry.**
- **Map port 8080 in the container to port 8888 on host.**
- **Mount the /srv/web directory on host as /var/www in container.**
- **Declare the environment variable HTTPD_MPM with event for value.**
- **Using Containers user, configure systemd so that web container starts automatically with the server.**

Ans:
ssh containers@node2
podman login registry.lab.example.com (admin redhat321)
podman run -d --name web -p 8888:8080 -v ~/srv/web:/var/www:Z -e HTTPD_MPM=event registry.lab.example.com/rhel8/httpd-24:1-105
[podman run -d --name web -p 8888:80 -v /srv/web:/var/www:Z -e HTTPD_MPM=event docker.io/centos/httpd:latest]
curl http://localhost:8888/

mkdir -p ~/.config/systemd/user/
cd ~/.config/systemd/user
podman generate systemd --name web --files --new (do not stop service with --new option)
podman stop web
podman rm web
systemctl --user daemon-reload
systemctl --user enable --now container-web.service
podman ps --all
loginctl enable-linger --> start user service with start of server
systemctl reboot
ssh containers@node2
podman ps
curl http://localhost:8888/

==========
Prequisite of container question:

useradd containers
passwd containers
ssh containers@servera
mkdir html ; echo "Container testing Page!!" > html/index.html
tar -cvzf web-content.tgz html/
ls -l

mkdir -p ~/.config/containers
vim ~/.config/containers/registries.conf
unqualified-search-registries = ['registry.lab.example.com']

[[registry]]
location = "registry.lab.example.com"
insecure = true
blocked = false
wq!

 podman search httpd

Configure the host system journal to preserves its data after reboot and restart the logging server.

Copy any *.journal files from the host /var/log/journal directory & any sub-directories under the directory /home/user/container-journal

Configure the server to automatically mount the directory /home/user/container-journal under /var/log/journal on the container where its starts.

[root@localhost /]# ls -l /var/log/journal

[root@localhost /]# vim /etc/systemd/journald.conf

Storage=persistent

Or

[root@localhost /]# mkdir /var/log/journal

[root@localhost /]# systemctl restart systemd-journald

[root@localhost /]# ls -l /home/user/container-logserver

mkdir -p /home/user/container-logserver

cd /var/log/journal/<nodeid>

ls

cp *.journal /home/user/container-logserver

If two node-ids present then:

cp -av /var/log/jounal/*/*.journal /home/user/container-logserver

ls -l /home/user/container-logserver (Make sure owner is user:user)

chown -R user:user /home/user/container-logserver/

[root@localhost /]# yum module install container-tools -y

[root@localhost /]# ssh user@localhost ---> (SSH ONLY)

[user@localhost /]$ podman login registry.redhat.io

[user@localhost /]$ podman pull registry.redhat.io/rhel8/rsyslog

[user@localhost /]$ podman run -d --name logserver -v /home/user/container-logserver/:/var/log/journal/:Z registry.redhat.io/rhel8/rsyslog

[user@localhost /]$ mkdir -p /home/user/.config/systemd/user

[user@localhost /]$ cd /home/user/.config/systemd/user

$ podman generate systemd --name logserver --files --new (--new is not supported in 1.6)

Or

$ podman generate systemd logserver > container-logserver.service

[user@localhost user]$ vim container-logserver.service

[user@localhost user]$ systemctl --user daemon-reload

[user@localhost user]$ podman stop logserver

Podman rm logserver

[user@localhost user]$ systemctl --user start container-logserver.service

[user@localhost user]$ systemctl --user enable container-logserver.service

[user@localhost user]$ systemctl --user status container-logserver.service

[user@localhost user]$ loginctl enable-linger user

Testing : # podman exec -it <container-id> /bin/bash

logger “Welcome”

Create a script in a /usr/bin with name newsearch. Find all the files in between 30kb to 50kb in /etc folder and put the output in /root/mount.

mkdir /root/mount

Vim /usr/bin/newsearch.sh

#!/bin/bash

Find /etc -size +30k -size -50k -exec cp -pv {} /root/mount \;

chmod +x /usr/bin/newsearch.sh

newsearch.sh

Create a file in Skel directory so that once you add a user so that file is available in users home directory.

cd /etc/skel

echo “welcome” > welcome

Add a profile massage to user so that user can see massage at login.

cd /home/username

vim .bash_profile

echo “welcome to RedHat Linux”

exit ; su - username

Group members should have sudo privileges.

Visudo

%groupname ALL=(ALL) ALL

All Users have max password age 20 days or password expiry of any user is 20 days.

Vim /etc/login.defs

Password Max days 99999 --> 20