Practice Test 2 RHCSA (EX200)

Question 1

1. Assume you have forgotten the root password for ServerB. Reset the root password to "secret" to regain access to the system.
    - `e` on grub kernel selector
    - Type `rd.break` after the `ro` term
    - Ctrl + X
    - `mount -o remount rw /sysroot`
    - `chroot /sysroot`
    - `passwd root`
        - change password to 'secret'
    - `touch /.autorelabel`
    - `exit`
    - `reboot`

Question 2

2. On ServerB, set up a local Yum/DNF repository using the /RHEL-9.iso image mounted on the /repo directory. Ensure the repository is accessible for package installation and updates, and address any potential issues with Red Hat Subscription Management registration.
    - Mount iso Image
    - `mount /dev/sr0 /repo`
    - `cd /etc/yum.repos.d/`
    - `cat redhat.repo` // To see format of a repo file
    - `vi /etc/yum.repos.d/rhel9.repo`

File editor:

```
[BaseOS]
name=BaseOS Packages Red Hat Enterprise Linux 9
metadata_expire=-1
gpgcheck=1
enabled=1
baseurl=file:///mnt/disc/BaseOS/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release

[AppStream]
name=AppStream Packages Red Hat Enterprise Linux 9
metadata_expire=-1
gpgcheck=1
enabled=1
baseurl=file:///mnt/disc/AppStream/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
```

- - `dnf clean all`
    - `dnf repolist`

- `dnf install nfs-utils`

Question 3

3. On ServerB, modify your active network interface configuration to follow the following specifications statically:
   - IPV4 – 192.168.1.3/24
   - GW – 192.168.1.1
   - DNS – 8.8.8.8
   - `nmcli connection modify enp0s3 ipv4.addresses 192.168.1.3/24`
   - `nmcli connection modify enp0s3 ipv4.method manual`
   - `nmcli connection modify enp0s3 ipv4.gateway 192.168.1.1`
   - `nmcli connection modify enp0s3 ipv4.dns 8.8.8.8`
   - `nmcli connection down enp0s3 && nmcli connection up enp0s3`
   - `ifconfig`

Question 4

4. On ServerB, add the following secondary IPV4 address statically to your current running interface. Do this in a way that doesn't compromise your existing settings:
   - IPV4 – 10.0.0.3/24
   - `nmcli connection modify enp0s3 +ipv4.addresses 10.0.0.3/24`
   - `nmcli connection down enp0s3 && nmcli connection up enp0s3`
   - `ip addr`

Question 5

5. On ServerB, add the following IPV6 address statically to your current running interface. Do this in a way that doesn't compromise your existing settings:
   - IPV6 – fd01::103/64
   - `nmcli connection modify enp0s3 ipv6.addresses fd01::103/64`
   - `nmcli connection modify enp0s3 ipv6.method manual`
   - `nmcli connection down enp0s3 && nmcli connection up enp0s3`
   - `ifconfig`

Question 6

6. On ServerB, set the system time to your nearest timezone.
   - `timedatectl list-timezone | grep Chihuahua`
   - `timedatectl set-timezone "America/Chihuahua"`
   - `timedatectl show`

Question 7

7. On ServerB, ensure NTP sync is configured.
   - `systemctl status chronyd`

- `timedatectl set-ntp true`
- `vi /etc/chrony.conf`
  - Add the line: `server 8.8.8.8`
- `systemctl restart chronyd`
- `chronyc`
  - `sources` // To see dns.google listed

Question 8

8. Enable IPV4 packet forwarding on ServerB persistently.
   - `sysctl net.ipv4.ip_forward` // Read the current state of IP forwarding
   - `vi /etc/sysctl.conf`
     - Add the line: `net.ipv4.ip_forward = 1`
   - `sysctl -p` // To read changes from file
   - `cat /proc/sys/net/ipv4/ip_forward`

Question 9

9. Enable IPV6 packet forwarding on ServerB. This should persist after a reboot.
   - `sysctl net.ipv6.conf.all.forwarding` // Read the current state of IP forwarding
   - `vi /etc/sysctl.conf`
     - Add the line: `net.ipv6.conf.all.forwarding = 1`
   - `sysctl -p`
   - `reboot`

Question 10

10. On ServerB, boot messages should be present (not silenced).
    - `vi /etc/default/grub`
      - Delete `rhgb quiet` from the end of the GRUB_CMDLINE_LINUX= line
    - `grub2-mkconfig -o /boot/grub2/grub.cfg`

Question 11

11. On ServerB, use /dev/sdb to do the following:
    1. Create a 4GiB volume group named “vgmyvg”.
    2. Create a 1GiB logical volume named “lvmylv” inside the “vgmyvg” volume group.
    3. The “lvmylv” logical volume should be formatted with the ext4 filesystem and mounted persistently on the /lvmylv directory
    4. Extend the ext4 filesystem on “lvmylv” by 500M.
    - `fdisk -l`
    - `fdisk /dev/sdb`
      - `p` `n` `p` `1` `Enter` `+4G` `p` `l` `t` `8e` `p` `w`
    - `pvcreate /dev/sdb1`
    - `pvdisplay`

- `vgcreate vgmyvg /dev/sdb1`
- `vgdisplay`
- `lvcreate -n lvmylv -L 1G vgmyvg`
- `mkfs.ext4 /dev/vgmyvg/lvmylv`
- `mount /dev/vgmyvg/lvmylv /lvmylv/`
- `vi /etc/fstab`
  - Add the line: `/dev/mapper/vgmyvg-lvmylv /lvmylv ext4 defaults 0 0`
- `lvextend -L +500M /dev/vgmyvg/lvmylv`

Question 12

12. On ServerB, configure Apache to serve a basic website that shows the text "Hello World!"
    - `dnf install httpd` \
    - `systemctl status httpd`
    - `firewall-cmd --list-all`
    - `firewall-cmd --add-service=http --permanent`
    - `vi /var/www/html/index.html`
      - Add the line: `Hello World!`
    - `curl http://localhost`

Question 13

13. On ServerB, write a script "/yes-no.sh" that does the following:
    a. If the argument is 'yes', the script should run the command echo “that's nice”.
    b. If the argument is 'no', the script should run the command echo "I am sorry to hear that".
    c. If the argument is anything else, the script should run the command echo "unknown argument provided".
    - `vi /yes-no.sh`

File editor:

```
#!/bin/bash
if [ $1 == "yes" ]
then
    echo "that's nice"
elif [ $1 == "no" ]
then
        echo "I am sorry to hear that"
else
        echo "unknown argument provided"
fi
```

- - `chmod a+x /yes-no.sh`
  - `/yes-no.sh yes`

Question 14

14. On ServerB, change the hostname to rhel.server.com and make it persistent.
    - `vi /etc/hostname`

    - Change line to: `rhel.server.com`
- `reboot`

Question 15

15. On ServerB, install the appropriate kernel update. The following criteria must also be met:
    a. The updated kernel is the default kernel when the system is rebooted.
    b. The original kernel remains available and bootable on the system.
    - `dnf update -y`
    - `dnf update kernel -y`
    - `reboot`

Question 16

16. On ServerB, find the regular files owned by the user root in the “/usr/bin” and copy the files into the “/find/rootfiles/” directory.
    - `mkdir /find`
    - `mkdir /find/rootfiles`
    - `find /usr/bin -type f -user root -exec cp {} /find/rootfiles/ \;`
    - `ls -l /find/rootfiles`

Question 17

17. On ServerB, all new users should have a file name “Note” in their home directory after account creation.
    - `touch /etc/skel/Note`

Question 18

18. On ServerB, all user passwords should expire after 100 days and be at least 9 characters in length.
    - `vi /etc/login.defs`
        - Change line to: `PASS_MAX_DAYS 100`
    - `vi /etc/security/pwquality.conf`
        - Uncomment and change line to: `minlen = 9`

Question 19

19. On ServerB, create a user sam whose UID is 1500, and he doesn't have access to any interactive shell on the system.
    - `useradd -u 1500 -s /sbin/nologin sam`
    - `id sam`
    - `tail -1 /etc/passwd` // Check user on /etc/passwd file

Question 20

20. On ServerB, copy the file “/etc/fstab” to “/var/tmp”, then do the following:
    a. Configure the permissions of “/var/tmp/fstab” so that the file “/var/tmp/fstab” is owned by the root user, belongs to the group root, and should not be executable by anyone.
    b. The user stewart can read & write “/var/tmp/fstab”.
    c. The user kevin can neither write nor read “/var/tmp/fstab”.
    - `cp /etc/fstab /var/tmp/`
    - `chown root /var/tmp/fstab`
    - `chgrp root /var/tmp/fstab`
    - `chmod a-x /var/tmp/fstab`
    - `useradd stewart`
    - `useradd kevin`
    - `setfacl -m u:stewart:rw- fstab`
    - `setfacl -m u:kevin:--- fstab`
    - `getfacl fstab`

Question 21

21. On ServerB, as root create a cron job that deletes empty files from /tmp at 12:45 am daily.

- `crontab -e`
    - Add the line: `45 0 * * * find /tmp/ -type f -empty -delete` // Note 0 is 12 am

Question 22

22. On ServerB, create a compressed tar file “/archive/myetc.tbz2” of the “/etc” directory. Then restore the archived data in the “/restored/myetc/” directory.
    - `mkdir /archive`
    - `mkdir /restored`
    - `mkdir /restored/myetc`
    - `tar cvjpf /archive/myetc.tbz2 /etc` // The 'p' option is to preserver permissions
    - `tar xvjpf /archive/myetc.tbz2 -C /restored/myetc` // The -C option is to change archive content to a specified directory

Question 23

23. On ServerB, optimize the system to run in a virtual machine for the best performance and concurrently tunes it for low power consumption. Low power consumption is the priority.
    - `dnf install tuned`
    - `systemctl start tuned`
    - `tuned-adm list`
    - `tuned-adm active`
    - `tuned-adm profile virtual-guest powersave`

Question 24

24. Setup SSH Passwordless Login in ServerA for the user Sam.

- (On ServerA)
  - `systemctl status sshd`
- (On ServerB)
  - `ssh-keygen`
  - `ssh-copy-id Sam@192.168.1.11`

Question 25

25. Disable password authentication on rhel.server.com.
    - `vi /etc/ssh/sshd_config`
      - Uncomment and change line to: `PasswordAuthentication no`
    - `systemctl restart sshd`

Question 26

26. On rhel.server.com, set SELinux to “enforcing” mode.
    - `getenforce`
    - `setenforce 1`
    - `sestatus`

Question 27

27. On rhel.server.com, using /dev/sdb create a 500MiB swap partition which takes effect automatically at boot start.
    - `free -m`
    - `fdisk -l`
    - `fdisk /dev/sdb`
      - `p` `n` `p` `2` `Enter` `+500M` `p` `l` `t` `2` `82` `p` `w`
    - `mkswap /dev/sdb2`
    - `blkid`
    - `vi /etc/fstab`
      - Add the line: `UUID=... swap swap defaults 0 0`
    - `mount -a`
    - `swapon /dev/sdb2`
    - `lsblk`
    - `free -m`

Question 28

28. Restrict root login on rhel.server.com.
    - `vi /etc/ssh/sshd_config`
      - Change line to: `PermitRootLogin no`
    - `systemctl restart sshd`

Question 29

29. On rhel.server.com, do the following:
    1. Install container-tools.
    2. Set up a local image repository in “/var/lib/registry” on port 5000 with Podman.
    3. Push the httpd container image to the image repository.

- `dnf install container-tools -y`
- `mkdir -p /var/lib/registry`
- `podman run --priviliged -d --name registry -p 5000:5000 -v /var/lib/reistry:/var/lib/registry:Z registry` // 'registry' is an alias for an image
- `vi /etc/containers/registries.conf`
    - Uncomment the line: `[[registry]]`
    - Uncomment and change line to: `insecure = true`
    - Uncomment and change line to: `location = "localhost:5000"`
- `podman search httpd --filter=is-official`
- `podman pull docker.io/library/httpd`
- `podman tag docker.io/library/httpd localhost:5000/httpd`
- `podman push localhost:5000/httpd`
- `ls -l /var/lib/registry/docker/...` // to verify

!!! Question 30

30. What is the user-specific startup files?
    - `~/.bash_profile`
    - `~/.bashrc`
    - `~/.profile`
    - `~/.bash_login`
    - `~/.bash_logout`

Question 31

31. Run "sleep 100" in the background with a priority value of "30".
    - PR = 20 + NI
        - NI needs to be 10 so that PR is 30
    - `nice -n 10 sleep 100 &`
    - `ps -eo pid,ni,pri,args | grep sleep`

Question 32

32. Which of the following commands kills the process with the PID 112 but allows the process to "clean up" before exiting?
    - `kill -TERM 112`
        - The `TERM` signal is the default `kill` command signal and lets the process "clean up" before exiting

Question 33

33. Which of the following commands redirects the output of “echo cmd” to the file “cmd.txt”, in which an existing file is overwritten?

- `echo cmd > cmd.txt`

Question 34

34. When given the following command line.
    `$ echo "foo bar" | tee bar | cat`
    Which of the following output is created?
    - `foo bar` // the `tee` command only outputs the `echo` command into the `bar` file

Question 35

35. How can the current directory and its subdirectories be searched for a file named MyFile.xml?
    - grep -r MyFile.xml .
    - find . -name MyFile.xml
    - search Myfile.xml ./
    - grep MyFile.xml | find
    - `find . –name MyFile.xml`

Question 36

36. Configure rhel.server.com (the NFS client) to automatically mount the share rhcsa.server.com:/share on the /nfs directory.
    - `mkdir /nfs`
    - `vi /etc/fstab`
        - Add the line: `rhcsa.server.com:/share /nfs nfs defaults 0 0`
    - `mount –a`

Question 37

37. On rhel.server.com, build an image named "hello_world" from a Containerfile that installs and configures a web server (httpd) to start automatically by the systemd service (/sbin/init) when the container is running on your host system. Then run a new container from the "hello_world" image and name it "hello_world_run". The Containerfile should follow these instructions:
    - Base Image: Red Hat Universal Base Image 8 Init (ubi8/ubi-init).
    - The Web server should display "Hello World!" Once you connect to it.
    - Expose the Web server to port 80.
    - `mkdir ~/Hello_World`
    - `cd ~/Hello_World`
    - `vi Containerfile`

File editor:

```
FROM registry.access.redhat.com /ubi8/ubi-init    #image name on podman
RUN yum –y isntall httpd; yum clean all; systemctl enable httpd;
RUN echo "Hello World!" > /var/www/html/index.html
RUN mkdir /etc/systemd/system/httpd.service.d/; echo –e '[Service]\nRestart=always' >
/etc/systemd/system/httpd.service.d/httpd.conf
```

```
EXPOSE 80
CMD ["/sbin/init"]
```

- - `podman build --format=docker -t hello_world .` // The `-t` option is to apply tag name
  - `podman images`
  - `setsebool -P container_manage_cgroup 1`
  - `systemctl stop httpd` // Stop current httpd since it is using port 80
  - `podman run -d --name hello_world_run -p 80:80 hello_world`
  - `podman ps`
  - `curl localhost`

Question 38

38. On rhel.server.com, prevent all users from using the crontab command except tom.
    - `echo "ALL" >> /etc/cron.deny`
    - `echo "tom" >> /etc/cron.allow`

!!! Question 39

39. On rhel.server.com, create a directory hierarchy /V1/V2/V3/, and recursively apply the SELinux context of the /etc directory.
    - `mkdir -p /V1/V2/V3`
    - `ls -ldZ /etc` // See the etc_t type
    - `semanage fcontext -a -t etc_t "/V1(/.*)?"` // The (/.*)? expression allows to modify the context recursively including /V1
    - `restorecon -Rv /V1`
    - `ls -ldZ /V1/V2/V3`

Question 40

40. On rhel.server.com, find the string blank in "/etc/passwd" and send it to the file "/home/blankword" without removing the file content.
    - `grep blank /etc/passwd >> /home/blankword`

!!! Question 41

41. On rhel.server.com, install the package `zsh`. The package named `zsh` is dumped on ftp://server.example.com under the /pub/updates directory.
    Credentials
    - Username: admin
    - Password: admin
    - `ftp server.example.com`
    - `cd /pub/updates`
    - `binary`
    - `ls`
    - `get zsh.rpm`

- `exit`
- `rpm -ivh zsh.rpm`

Question 42

42. Create a hard and symbolic link to a file called "data.txt". The original file is located in the /home/$USER/ directory. The hard link should be created in the same directory, while the symbolic link should be created in the /var/tmp/ directory.
    - `mkdir /home/$USER`
    - `touch /home/$USER/data.txt`
    - `ln /home/$USER/data.txt data-link` // Give a different name than the file because they will be in the same directory
    - `ls -ltr /home/$USER`
    - `cd /var/tmp`
    - `ln -s /home/$USER/data.txt`
    - `ls -ltr`

Question 43

43. Create a directory named "/collaboration" on ServerB, and configure it so that any files or subdirectories created within that directory are owned by the group "managers".
    - `mkdir /collaboration`
    - `groupadd managers`
    - `chgrp managers /collaboration`
    - `chmod g+s /collaboration`
    - `ls -ld /collaboration`