This is a sample RHCE exam that I've created to prepare for the RHCE9 exam EX294.

As with the real exam, no answers to the sample exam questions will be provided.

Requirements

There are 15 questions in total.

You will need four RHEL 9 virtual machines to be able to successfully complete all questions.

One VM will be configured as an Ansible control node. Other three VMs will be used to apply playbooks to solve the sample exam questions. The following FQDNs will be used throughout the sample exam.

- **control.tekup.com – Ansible control node**
- **ansible1.tekup.com – managed host**
- **ansible2.tekup.com – managed host**
- **ansible3.tekup.com – managed host**

There are a couple of requirements that should be met before proceeding further:

- **control.tekup.com server has passwordless SSH access to all managed servers (using the root user).**
- **ansible3.tekup.com server has a 1GB secondary `/dev/sdb` disk attached.**
- **You can create regular users on any of the servers.**

Tips and Suggestions

I tried to cover as many exam objectives as possible, however, note that there will be no questions related to dynamic inventory.

Some questions may depend on the outcome of others. Please read all questions before proceeding.

Note that the purpose of the sample exam is to test your skills. Please don't post your playbooks in the comments section.

Sample Exam Questions

Note: you have root access to all five servers.

Task 1: Ansible Installation and Configuration

Install ansible package on the control node (including any dependencies) and configure the following:

- **Create a regular user "rhce" with the password of "rhce". Use this user for all sample exam tasks and playbooks, unless you are working on the task #2 that requires creating the "rhce" user on inventory hosts. You have root access to all five servers.**

- All playbooks and other Ansible configuration that you create for this sample exam should be stored in `/home/rhce/exam`.

Create a configuration file `/home/rhce/exam/ansible.cfg` to meet the following requirements:

- The roles path should include `/home/rhce/exam/roles`, as well as any other path that may be required for the course of the sample exam.
- The inventory file path is `/home/rhce/exam/inventory`.
- Privilege escalation is disabled by default.
- Ansible should connect to all managed nodes using the rhce user.

Create an inventory file `/home/rhce/exam/inventory` with the following:

- ansible1.tekup.com is a member of the dev host group.
- ansible2.tekup.com is a member of the test host group.
- ansible3.tekup.com is a member of the prod host group.

Task 2: File Content

Create a playbook `/home/rhce/exam/motd.yml` that runs on all inventory hosts and does the following:

- The playbook should replace any existing content of `/etc/motd` with text. Text depends on the host group.
- On hosts in the prod host group the line should be “Welcome to prod server”.
- On hosts in the test host group the line should be “Welcome to test server”.
- On hosts in the dev host group the line should be “Welcome to dev server”.

Task 3: Configure VSFTPD Server

Create a playbook `/home/rhce/exam/vsftpd.yml` that runs on all inventory hosts and configures VSFTPD daemon as follows:

- anonymous_enable is set to yes
- ssl_enable is set to no
- local_enable is set to no

Task 4: Ansible Vault

Create Ansible vault file `/home/rhce/exam/secret.yml`. Encryption/decryption password is “rhce”.

Add the following variables to the vault:

- userpass with value of rhce
- dbpass with value of rhce

Store Ansible vault password in the file `/home/rhce/exam/pass`.

Task 5: Users and Groups

You have been provided with the list of users below.

Use `/home/rhce/exam/vars/userlist.yml` file to save this content.

```
---
userlist:
  - username: alice
    uid: 1201
    shell: /bin/bash
    home_dir: /home/alice
  - username: vincent
    uid: 1202
    shell: /bin/bash
    home_dir: /home/vincent
  - username: sandy
    uid: 2201
    shell: /bin/bash
    home_dir: /home/test
  - username: patrick
    uid: 2202
    shell: /bin/bash
    home_dir: /exam/patrick
```

Create a playbook `/home/rhce/exam/users.yml` that uses the vault file `/home/rhce/exam/secret.yml` to achieve the following:

- **Users "alice" and "vincent" should be created on servers in the prod host group. User password should be used from the userpass variable.**
- **Users "sandy" and "patrick" should be created on servers in the dev host group. User password should be used from the userpass variable.**
- **All users should be members of a supplementary group exam.**
- **Account passwords should use the SHA512 hash format.**
- **Each user should have an SSH key uploaded (use the SSH key of user "rhce" that you created previously, see task #2).**

Task 6: Scheduled Tasks

Create a playbook `/home/rhce/exam/regular_tasks.yml` that runs on servers in the test host group and does the following:

- **A root crontab record is created that runs every 3 minutes.**
- **The cron job appends the file `/var/log/time.log` with the output from the date command.**

Task 7: Software Repositories

Create a playbook `/home/rhce/exam/repository.yml` that runs on servers in the dev host group and does the following:

- **A YUM repository file is created.**
- **The name of the repository is haproxy-repo.**
- **The description of the repository is "HaProxy 8.0 YUM Repo".**
- **Repository baseurl is http://repo.haproxy.com/yum/haproxy-8.0-community/el/8/x86_64/.**
- **Repository GPG key is at http://repo.haproxy.com/RPM-GPG-KEY-haproxy.**
- **Repository GPG check is enabled.**
- **Repository is enabled.**

Task 8: Create and Work with Roles (Some More)

Create a role called sample-apache and store it in `/home/rhce/exam/roles`. The role should satisfy the following requirements:

- **The httpd, mod_ssl and php packages are installed. Apache service is running and enabled on boot.**
- **Firewall is configured to allow all incoming traffic on HTTP port TCP 80 and HTTPS port TCP 443.**
- **Apache service should be restarted every time the file `/var/www/html/index.html` is modified.**
- **A Jinja2 template file `index.html.j2` is used to create the file `/var/www/html/index.html` with the following content:**

```
The address of the server is: IPV4ADDRESS
```

IPV4ADDRESS is the IP address of the managed node.

Create a playbook `/home/rhce/exam/apache.yml` that uses the role and runs on hosts in the test host group.

Task 9: Security

Create a playbook `/home/rhce/exam/selinux.yml` that runs on hosts in the dev host group and does the following:

- **Enables httpd_can_network_connect SELinux boolean.**
- **The change must survive system reboot.**

Task 10: Use Conditionals to Control Play Execution

Create a playbook `/home/rhce/exam/sysctl.yml` that runs on all inventory hosts and does the following:

- **If a server has more than 2048MB of RAM, then parameter vm.swappiness is set to 10.**

- If a server has less than 2048MB of RAM, then the following error message is displayed:

Server memory less than 2048MB

Task 11: Use Archiving

Create a playbook `/home/rhce/exam/archive.yml` that runs on hosts in the prod host group and does the following:

- A file `/mnt/mysql_backups/database_list.txt` is created that contains the following line: dev,test,qa,prod.
- A gzip archive of the file `/mnt/mysql_backups/database_list.txt` is created and stored in `/mnt/mysql_backups/archive.gz`.

Task 12: Work with Ansible Facts

Create a playbook `/home/rhce/exam/facts.yml` that runs on hosts in the dev host group and does the following:

- A custom Ansible fact server_role=mysql is created that can be retrieved from ansible_local.custom.sample_exam when using Ansible setup module.

Task 13: Software Packages

Create a playbook `/home/rhce/exam/packages.yml` that runs on all inventory hosts and does the following:

- Installs tcpdump and nmap packages on hosts in the dev host groups.
- Installs lsof and nmap packages on hosts in the prod host groups.

Task 14: Services

Create a playbook `/home/rhce/exam/target.yml` that runs on all hosts and does the following:

- Sets the default boot target to multi-user.

Task 15. Create and Use Templates to Create Customized Configuration Files

Create a playbook `/home/rhce/exam/server_list.yml` that does the following:

- Playbook uses a Jinja2 template `server_list.j2` to create a file `/etc/server_list.txt` on hosts in the test host group.
- The file `/etc/server_list.txt` is owned by the “rhce” user.
- File permissions are set to 0600.
- SELinux file label should be set to net_conf_t.
- The content of the file is a list of FQDNs of all inventory hosts.

After running the playbook, the content of the file `/etc/server_list.txt` should be the following:

```
ansible1.tekup.com
ansible2.tekup.com
ansible3.tekup.com
```

Note: if the FQDN of any inventory host changes, re-running the playbook should update the file with the new values.