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Exam : EX403

Title : Red Hat Certified Specialist
in Deployment and Systems
Management exam

Version : DEMO

1.Lab Task 1: ZTP Network Infrastructure & Proxy Delegation Scenario: You are deploying a new branch office infrastructure strictly managed by a local Capsule server (capsule.branch.local). The physical network is heavily segmented. You must prepare Satellite to provision bare-metal RHEL 9 hosts via PXE strictly over this branch subnet. Constraints:

1. Subnet Network: 192.168.100.0/24 (Gateway: 192.168.100.1).
2. The primary Satellite server MUST NOT be involved in DHCP, TFTP, or Template rendering for this subnet. All these services must be explicitly delegated to the Capsule.
3. You must construct a Host Group named Branch_Kiosk that enforces this Subnet, utilizing the 'Kickstart default' template.

Answer:

Execution Path (CLI Method):

1. Create the subnet and explicitly bind the Capsule proxies

```
hammer subnet create
```

```
--name "Branch_Subnet_100"
```

```
--network "192.168.100.0"
```

```
--mask "255.255.255.0"
```

```
--gateway "192.168.100.1"
```

```
--dhcp-id $(hammer capsule info --name capsule.branch.local | grep Id: | awk '{print $2}')
```

```
--tftp-id $(hammer capsule info --name capsule.branch.local | grep Id: | awk '{print $2}')
```

```
--template-id $(hammer capsule info --name capsule.branch.local | grep Id: | awk '{print $2}')
```

2. Construct the Host Group

```
hammer hostgroup create
```

```
--name "Branch_Kiosk"
```

```
--architecture "x86_64"
```

```
--operatingsystem "RedHat 9.2"
```

```
--subnet "Branch_Subnet_100"
```

```
--partition-table "Kickstart default"
```

```
--pxe-loader "Grub2 UEFI"
```

Grading Engine Teardown & Pitfalls: [Syllabus Domain: Prepare network configuration for provisioning on either a Satellite or a capsule server]

☞ The Kill Switch: The official grading script will simulate a TFTP boot. If you forgot to assign the --template-id (Templates proxy) to the Capsule, the Foreman engine defaults to rendering the inst.ks= URL pointing to the primary Satellite server. Because the branch network is segmented, the Anaconda installer will timeout attempting to download the Kickstart file, resulting in an immediate zero score for the provisioning module.

☞ PXE Loader Trap: Modern RHEL 9 bare-metal servers default to UEFI. Leaving the --pxe-loader as the legacy "PXELinux BIOS" will cause the DHCP server to hand out the wrong bootloader (pxelinux.0 instead of grubx64.efi), halting the boot instantly.

2.Lab Task 2: Advanced Content Filtering & Composite AppStream Deadlocks Scenario: Security mandates require a hardened RHEL 8 AppStream repository for the 'Prod_DB' lifecycle environment. You must create a Content View (CV) named RHEL8_Hardened. Constraints:

1. It must include the RHEL 8 BaseOS and AppStream repositories.
2. You must implement a Filter that strictly EXCLUDES the package postgresql-server.

3. You must publish and promote this CV to 'Prod_DB' without breaking module dependencies.

Answer:

Execution Path (CLI Method):

1. Create the CV and add repositories

```
hammer content-view create --name "RHEL8_Hardened" --organization "Default_Org" hammer content-view add-repository --name "RHEL8_Hardened" --repository "Red Hat Enterprise Linux 8 for x86_64 - BaseOS (RPMs)" hammer content-view add-repository --name "RHEL8_Hardened" --repository "Red Hat Enterprise Linux 8 for x86_64 - AppStream (RPMs)"
```

2. Create the Filter (The Critical Step)

```
hammer content-view filter create --name "Block_Postgres" --content-view "RHEL8_Hardened" --type "rpm"
```

3. Add the exclusion rule

```
hammer content-view filter rule create --content-view "RHEL8_Hardened" --content-view-filter "Block_Postgres" --name "postgresql-server"
```

4. Publish and Promote

```
hammer content-view publish --name "RHEL8_Hardened" hammer content-view version promote --content-view "RHEL8_Hardened" --to-lifecycle-environment "Prod_DB"
```

Grading Engine Teardown & Pitfalls: [Syllabus Domain: Create content filters using Content Views / Manage content and software products]

☞ The Modulemd Trap: RHEL 8 heavily utilizes modularity (AppStream). If a user attempts to filter out postgresql-server using an Errata filter (by date) instead of an explicit RPM filter, they risk fracturing the underlying modulemd stream. The official grading script will test this by running `dnf module list postgresql` on a client. If the module appears as [broken] or the CV publish task hangs on Cannot resolve dependencies for modular RPMs (Pulp error), the task fails. You must filter at the raw RPM level to ensure the repository metadata recalculates correctly.

3.Lab Task 3: Remote Execution (REX) Variable Precedence Engineering Scenario: A custom Ansible role `chrony_baseline` is imported into Satellite. The role configures the NTP server. The role's `defaults/main.yml` sets the variable `ntp_server` to `pool.ntp.org`. Constraints:

1. You must ensure that any host provisioned into the `Branch_Kiosk` Host Group automatically overrides this variable to `time.branch.local` during the Ansible run.
2. You must NOT edit the Ansible role's internal files. This must be handled natively by Satellite's Smart Class Parameters.

Execution Path (UI/CLI Method):

1. Import the variables from the role

```
hammer ansible variables import
```

2. Override the variable at the Host Group level

```
hammer ansible variables update --ansible-role "chrony_baseline" --name "ntp_server"
```

```
--override true
--default-value "pool.ntp.org"
--override-value "time.branch.local"
--hostgroup "Branch_Kiosk"
```

Grading Engine Teardown & Pitfalls: [Syllabus Domain: Manage Ansible roles and variables in Satellite]

☞ The Precedence Override Trap: The grading script will execute the role against a test node in the Branch_Kiosk group and inspect the /etc/chrony.conf file. If the administrator incorrectly attempts to set the variable as a Global Parameter instead of a Host Group-specific Smart Class Parameter, the parameter will bleed into other environments, causing a cascading failure across the infrastructure. Furthermore, if the original role author used vars/main.yml instead of defaults/main.yml in the Ansible code, Satellite's dynamic inventory (which injects as host variables, precedence level ~6) would be silently ignored, and the task would fail regardless of the Satellite configuration.

4.Lab Task 4: High-Velocity Disaster Recovery (Day 2 Operations) Scenario: The primary Satellite server is undergoing a critical hardware migration. You are tasked with generating a full offline backup.

Constraints:

1. The backup must guarantee absolute PostgreSQL database consistency (no split-brain during the dump).
2. To meet the 30-minute maintenance window, the backup MUST NOT include the physical RPM/ISO payloads in /var/lib/pulp, as the destination SAN already has a replicated copy of the block storage.

Answer:

Execution Path (CLI Method):

1. Execute the highly constrained backup command `satellite-maintain backup offline --skip-pulp-content /mnt/nfs_backup/satellite_dr_$(date +%F)`

Grading Engine Teardown & Pitfalls: [Syllabus Domain: Backup Satellite / Perform Satellite maintenance]

☞ The Consistency Trap: Many candidates attempt to write custom `pg_dump` scripts or run `satellite-maintain backup online`. The official constraint dictates "absolute database consistency" with a migration intent. An online backup risks active pulp sync tasks writing orphan metadata during the snapshot. The offline flag strictly halts the Apache/Puma, Pulpcore, and Candlepin services, ensuring a clean database lock.

☞ The Flag Trap: Forgetting `--skip-pulp-content` will cause the backup script to attempt archiving hundreds of gigabytes of RPMs into a TAR file, immediately blowing past the 30-minute maintenance window and failing the operational SLA requirement of the exam.

5.Lab Task 5: ZTP Closed-Loop Registration (The Post-Install Callback) Scenario: You are finalizing the Zero-Touch Provisioning (ZTP) pipeline for the 'Edge_Compute' Host Group. The physical servers successfully execute PXE, download the Kickstart, and install the RHEL 9 BaseOS. However, the architecture strictly mandates that no human intervention is allowed post-reboot. The server must automatically register to Satellite, attach the AK-RHEL9-Edge Activation Key, and deploy the Foreman SSH keys for immediate Ansible Remote Execution. Constraints:

1. You MUST NOT hardcode the Activation Key or Organization strings directly into the Kickstart ERB template (%post section).
2. The registration must be dynamically inherited based on the host's assigned Host Group taxonomy.

Answer:

Execution Path (CLI Method):

1. Bind the Activation Key dynamically as a Host Group parameter

```
hammer hostgroup set-parameter
```

```
--hostgroup "Edge_Compute"
```

```
--name "kt_activation_keys"
```

```
--value "AK-RHEL9-Edge"
```

2. Verify the Global/Host Group parameter inheritance for the setup script

```
hammer hostgroup info --name "Edge_Compute" | grep -A 5 "Parameters:"
```

Grading Engine Teardown & Pitfalls: [Syllabus Domain: Ensure remote executions are applied upon client installation / Provision clients]

☞ The Hardcoding Trap: The official default Kickstart default template utilizes a snippet named `redhat_register`. This snippet is written in ERB (Embedded Ruby) and looks for specific Host/HostGroup parameters (specifically `kt_activation_keys` and `kt_org`). If a candidate manually hacks the Kickstart template to hardcode `subscription-manager register --activationkey=...`, the grading engine's secondary test—provisioning a node into a *different* Organization using the same template—will catastrophically fail, resulting in a zero for the automation domain.

☞ The SSH Key Race Condition: If the `redhat_register` snippet fails because the parameter is missing, the subsequent snippet (`remote_execution_ssh_keys`) often fails as well because the Katello CA certificate was never downloaded. The host becomes an unmanageable orphan on the network.