RED HAT®
CONSULTING

DO285 - Red Hat OpenShift Administration 2 (OCP 4.5)

Travis Michette

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1. Configuring the Classroom Environment - DEMO

Before configuring the classroom environment you must first setup and configure Github and Quay.IO accounts.

Account Creation

The Github account creation steps are in Appendix A, while the Quay.IO account creation steps a located in Appendix B. It is best and easiest if you configure the Quay.IO account to rely on username and password. Additionally, if you've configured Github account to have two-factor (2FA) authentication you will need to setup the SSH config file to leverage the proper SSH keys and ID for the Github account.

1. Configure the Lab Environment

Listing 1. Initial Configuration

```
[student@workstation ~]$ lab-configure

. Enter the GitHub account name: tmichett
  Verifying GitHub account name: tmichett

. Enter the Quay.io account name: tmichett
  Verifying Quay.io account name: tmichett

. Configuring RHT_OCP4_GITHUB_USER variable: SUCCESS
. Configuring RHT_OCP4_QUAY_USER variable:   SUCCESS

. To reconfigure, run: lab-configure -d

. Ensuring user 'developer' can log in to the OpenShift cluster.
. HTPasswd Identify Provider configured
. NOTE: It might take up to one minute before user 'developer'
        can successfully log in to the OpenShift cluster.
```

2. Fork the https://github.com/RedHatTraining/DO180-apps repository.
3. Clone the DO180-Apps Repository

Listing 2. Cloning the Repository

```
[student@workstation ~]$ git clone https://github.com/tmichett/DO180-apps
Cloning into 'DO180-apps'...
remote: Enumerating objects: 106, done.
remote: Total 106 (delta 0), reused 0 (delta 0), pack-reused 106
Receiving objects: 100% (106/106), 226.47 KiB | 2.49 MiB/s, done.
Resolving deltas: 100% (24/24), done
```

2. Provisioning Containerized Services - DEMO

The following demonstration will show how to use the Universal Base Image (UBI) for RHEL8. I will allow you to see various **podman** commands in action that were demonstrated throughout the chapter. There will be a few new commands that are introduced as well.

Example 1. DEMO - Using the RHEL8 Universal Boot Image

1. Search for Containers (specifically UBI)

   Listing 3. Using **podman** *to search for container images*

```
[student@workstation Demos]$ podman search ubi8
INDEX        NAME                                                DESCRIPTION
STARS   OFFICIAL   AUTOMATED
redhat.com   registry.access.redhat.com/ubi8                     The Universal
Base Image is designed and eng...   0

... output omitted ...

quay.io      quay.io/tradisso/kogito-springboot-ubi8-s2i
0
[student@workstation Demos]$
```

2. Choose and run a container accessing the **bash** shell

   Listing 4. Running a Container and Accessing the Shell

```
[student@workstation Demos]$ sudo podman run -it
registry.access.redhat.com/ubi8/ubi /bin/bash
```

Getting an Interactive Shell

When running a container, it is possible to pass **-it** as a command line option and then specify an interactive shell such as **/bin/bash**

3. Verify that you are running the container and accessing the container shell.

   Listing 5. Verifying we are in the Container

```
[root@811b30c61a99 /]# cat /etc/redhat-release
Red Hat Enterprise Linux release 8.2 (Ootpa)
```

4. Change or Modify the Container - Install a package

Listing 6. Installing Packages in the Container

```
[root@811b30c61a99 /]# yum install httpd

... output omitted ...

  redhat-logos-httpd-81.1-1.el8.noarch

Complete!
```

5. Attempt to Enable Daemon for HTTPD with SystemD

Listing 7. Failure of **systemd** *and* **httpd** *as a Daemon*

```
[root@811b30c61a99 /]# systemctl enable httpd --now
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service →
/usr/lib/systemd/system/httpd.service.
System has not been booted with systemd as init system (PID 1). Can't operate.
Failed to connect to bus: Host is down
```

Containers and Services as Daemons

The container is running, but isn't a full blown virtual machine. Therefore, the systemd functionality and init system isn't running on a back-end. For apache to run, you can use specialized HTTPD containers. In order to run for this container, you will need to use **httpd &** to run the service in the background.

6. Run the HTTP package

Listing 8. Executing Applications in the Background

```
[root@811b30c61a99 /]# httpd&
[1] 67
[root@811b30c61a99 /]# AH00558: httpd: Could not reliably determine the server's
fully qualified domain name, using fe80::5c7a:a2ff:fe6b:d180. Set the 'ServerName'
directive globally to suppress this message

[1]+  Done                    httpd
```

7. Test the Webserver

Listing 9. Testing Apache HTTPD with Curl

```
[root@811b30c61a99 /]# curl http://localhost
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">

... output omitted ...

        </div>
    </body>
</html>
[root@811b30c61a99 /]#
```

8. Attempt to run old container

Listing 10. Use Podman to Launch Container

```
[student@workstation Demos]$ sudo podman run -it
registry.access.redhat.com/ubi8/ubi /bin/bash
[root@604e03f02d11 /]# exit
exit
```

Container ID Changed

New container is **root@604e03f02d11 /]** and the container with HTTPD was **root@811b30c61a99**

9. List Containers

Listing 11. Podman to list containers

```
[student@workstation Demos]$ sudo podman ps -a
CONTAINER ID   IMAGE                                         COMMAND     CREATED
STATUS                     PORTS   NAMES                IS INFRA
604e03f02d11   registry.access.redhat.com/ubi8/ubi:latest   /bin/bash   2 minutes
ago   Exited (0) 2 minutes ago           gallant_johnson       false
811b30c61a99   registry.access.redhat.com/ubi8/ubi:latest   /bin/bash   5 hours
ago     Exited (0) 5 minutes ago           suspicious_einstein   false
```

10. Launch container with HTTPD package

Listing 12. Launching Original Container

```
[student@workstation Demos]$ sudo podman start 811b30c61a99
811b30c61a9988beca57bbee769987a43f393ec5add6f44fd84244091547b926

[student@workstation Demos]$ sudo podman exec -it 811b30c61a99 /bin/bash
[root@811b30c61a99 /]#

[root@811b30c61a99 /]# httpd &
[1] 21
[root@811b30c61a99 /]# AH00558: httpd: Could not reliably determine the server's
fully qualified domain name, using fe80::bcea:baff:fe20:ac4b. Set the 'ServerName'
directive globally to suppress this message

[1]+  Done                    httpd

[root@811b30c61a99 /]# curl localhost
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
"http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">

... output omitted ...

        </div>
    </body>
</html>
[root@811b30c61a99 /]#
```

Container Management

Stopped containers don't appear as running. Stopped containers can be seen with the **podman ps -a** command. It is possible to launch/start a stopped container with the **podman start** command, but you must provide the container name/ID in order to start the container. The **podman exec** command will allow a command to be executed interactively in the container.

It is good practice to cleanup containers and images that are no longer needed.

Listing 13. Removing Containers

```
[student@workstation Demos]$ sudo podman ps -a
CONTAINER ID   IMAGE
COMMAND     CREATED          STATUS                     PORTS
NAMES                 IS INFRA
604e03f02d11   registry.access.redhat.com/ubi8/ubi:latest
/bin/bash   14 minutes ago   Exited (0) 6 minutes ago
gallant_johnson       false
811b30c61a99   registry.access.redhat.com/ubi8/ubi:latest
/bin/bash   5 hours ago      Exited (0) 2 seconds ago
suspicious_einstein   false


[student@workstation Demos]$ sudo podman rm 604e03f02d11
604e03f02d112008c0b75989055f9461fccc7db89d0efaadfbd7a2950cba9be4

[student@workstation Demos]$ sudo podman ps -a
CONTAINER ID   IMAGE
COMMAND     CREATED       STATUS                          PORTS
NAMES                 IS INFRA
811b30c61a99   registry.access.redhat.com/ubi8/ubi:latest
/bin/bash   5 hours ago   Exited (0) About a minute ago
suspicious_einstein   false
```