Module 8: Configuration Management with Puppet

Case Study Solution

edureka!

Problem Statement

Theo is working as a system administrator in Walcott Enterprises. The Company recently went public and because of it, 100 new developers were hired. Now, Theo must configure docker on test servers for the new developers. Theo researched and found that Puppet can help accomplish Infrastructure Management using IaC with ease.

Action Items

- Create a manifest to install docker on agent servers
- Create a manifest to add and build a docker file to create a docker image
- Create another manifest to run the docker image
- Compile the entire logic into a module and install the said module
- Use the module in the default manifest

Commands needed for this Case Study

Installing Docker:

1. curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
2. sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"
3. sudo apt-get update
4. apt-cache policy docker-ce
5. sudo apt-get install -y docker-ce

Building and running the Docker Container:

1. Link to download the .WAR file: Save it in /home/edureka/ directory
2. Link to download docker file: Save it in /home/edureka/ directory
3. Building docker file: sudo docker build -t edureka/new '/home/edrueka/'
4. sudo docker run -it -d -p 8091:8080 edureka/new

Verification

Go to **localhost:8091/addressbook** from your Virtual Machine's browser. You should see the address-book website deployed.

Solution

Note: All commands are run in sudo mode.

1. Create a Module by using the Generate Module command

   Syntax: /opt/puppetlabs/bin/puppet module generate moduleName

   ```
   root@edureka:/home/edureka/Documents/modules# /opt/puppetlabs/bin/puppet module generate edu-docker
   We need to create a metadata.json file for this module.  Please answer the
   following questions; if the question is not applicable to this module, feel free
   to leave it blank.

   Puppet uses Semantic Versioning (semver.org) to version modules.
   ```

2. Now, create a new manifest in the moduleName/manifests folder

   Syntax: vi moduleName/manifests/install.pp

   ```
   root@edureka:/home/edureka/Documents/modules# vi docker/manifests/install.pp
   ```

3. Write down the manifest for the docker installation

   ```
   class docker::install {


           package {'curl':
                   ensure  => present,
           }


           exec {'apt-update':
                   command => '/usr/bin/apt-get update'
           }


           exec {'download_docker_key':
                   command => '/usr/bin/curl -fsSL
   https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -'
           }


           exec {'add_docker_repo':
                   command => '/usr/bin/add-apt-repository "deb [arch=amd64]
   https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"',
                   require => Exec['apt-update']
           }


           exec {'docker_cache':
                   command => '/usr/bin/apt-cache policy docker-ce'
           }
   ```

```
exec {'install_docker':

        command => '/usr/bin/apt-get install -y docker-ce'

}


}
```

4. Download the .WAR file and the Dockerfile on the machine from:
   [Link to download the .WAR file](#)
   [Link to download docker file](#)

5. Create a files directory in your module directory

   Syntax: mkdir moduleName/files

   ```
   root@edureka:/home/edureka/Documents/modules# mkdir docker/files
   ```

6. Now, copy the downloaded files to this folder

Syntax: cp /source/directory/file /destination/directory

```
root@edureka:/home/edureka/Documents/modules# cp /home/edureka/Downloads/addressbook.war /home/edureka/Documents/modules/docker/files/
root@edureka:/home/edureka/Documents/modules# cp /home/edureka/Downloads/Dockerfile /home/edureka/Documents/modules/docker/files/
```

7. Write down another manifest to copy and execute the docker file in agent server

   Syntax: vi moduleName/manifests/files.pp

   ```
   root@edureka:/home/edureka/Documents/modules# vi docker/manifests/files.pp
   ```

   ```
   class docker::files {

           file {'/home/edureka/addressbook.war':
                   ensure  => present,
                   mode    => '0777',
                   source  => "puppet:///modules/docker/addressbook.war"
           }

           file {'/home/edureka/Dockerfile':
                   ensure  => present,
                   mode    => '0777',
                   source  => "puppet:///modules/docker/Dockerfile"
           }

           exec {'build_dockerfile':
                   command => "/usr/bin/docker build -t edureka/new
   '/home/edureka/'"
           }

           exec {'run_docker':
                   command => "/usr/bin/docker run -it -d -p 8091:8080 edureka/new"
           }

   }
   ```

8. Edit the init.pp manifest inside the manifests folder

`root@edureka:/home/edureka/Documents/modules# vi docker/manifests/init.pp`

Syntax: vi moduleName/manifests/init.pp

```
class docker {

        class {'docker::install':}

        class {'docker::files':}
}
```

9. Build the puppet module

Syntax: /opt/puppetlabs/bin/puppet module build moduleName

```
root@edureka:/home/edureka/Documents/modules# /opt/puppetlabs/bin/puppet module build docker
Notice: Building /home/edureka/Documents/modules/docker for release
Module built: /home/edureka/Documents/modules/docker/pkg/edu-docker-0.1.0.tar.gz
```

10. Install the build module

Syntax: /opt/puppetlabs/bin/puppet module install moduleName/pkg/moduleNameTarFile

```
root@edureka:/home/edureka/Documents/modules# /opt/puppetlabs/bin/puppet module install /home/edureka/Documents/modules/docker/pkg/edu-docker
-0.1.0.tar.gz
Notice: Preparing to install into /etc/puppetlabs/code/environments/production/modules ...
Notice: Downloading from https://forgeapi.puppet.com ...
Notice: Installing -- do not interrupt ...
/etc/puppetlabs/code/environments/production/modules
└─┬ edu-docker (v0.1.0)
  └── puppetlabs-stdlib (v4.25.1)
```

11. Add the module to the default puppet manifest

Syntax: vi /etc/puppetlabs/code/environments/production/manifests/site.pp

`root@edureka:~# vi /etc/puppetlabs/code/environments/production/manifests/site.pp`

```
class {'docker':}
```

12. On the agent run test the module

Syntax: /opt/puppetlabs/bin/puppet agent -t

```
root@edureka-1:~# /opt/puppetlabs/bin/puppet agent -t
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for edureka-1
Info: Applying configuration version '1527609843'
Notice: /Stage[main]/Docker::Install/Exec[apt-update]/returns: executed successfully
Notice: /Stage[main]/Docker::Install/Exec[download_docker_key]/returns: executed successfully
Notice: /Stage[main]/Docker::Install/Exec[add_docker_repo]/returns: executed successfully
Notice: /Stage[main]/Docker::Install/Exec[docker_cache]/returns: executed successfully
Notice: /Stage[main]/Docker::Install/Exec[install_docker]/returns: executed successfully
Notice: /Stage[main]/Docker::Files/Exec[build_dockerfile]/returns: executed successfully
Notice: /Stage[main]/Docker::Files/Exec[run_docker]/returns: executed successfully
Notice: Applied catalog in 15.45 seconds
root@edureka-1:~#
```