Lab 3.1: Prepare Installation

Objective:

- In this lab you prepare the installation of Foreman.

Steps:

- Make Puppetlabs repository available

Install the release package provided by the Puppetlabs repository to make it available for package installation of open source version of Puppet.

URL: http://yum.puppetlabs.com

- Make EPEL repository available

Install the release package provided by the EPEL repository to make it available for package installation required as dependency.

URL: http://fedoraproject.org/wiki/EPEL

- Make Foreman repository available

Install the release package provided by the Foreman repository to make it available for package installation of Foreman and its components.

URL: http://yum.theforeman.org

- Install foreman-installer

Install the package "foreman-installer" from the now available repositories.

Notes:

The host firewall allows traffic between virtual machines in the same network and forwards traffic from the virtual machine network to the host so no configuration is required.

Expected result:

The Foreman installer is installed and "foreman-installer --help" could be run from command line.

Lab 3.2: Install an All-in-one setup

Objective:

- In this lab we will install an All-in-one setup of Foreman with DNS and DHCP

Steps:

- Run foreman-installer with additional parameters

Notes:

DNS should be enabled and configured with the following parameters:

- interface=eth0
- zone=localdomain
- reverse=0.0.10.in-addr.arpa
- forwarders=8.8.8.8,8.8.4.4

DNS should be enabled and configured with the following parameters:

- interface=eth0
- gateway=10.0.0.1
- range=10.0.0.100-10.0.0.200
- nameserver=10.0.0.1

Expected result:

The Foreman installer runs successfully and provides login credentials to login to 'https://foreman.localdomain'.

You can find your provided parameters in the answer file created in '/etc/foreman/foreman-installer-answers.yaml'.

Lab 3.3: Add DNS configuration to Foreman

Objective:

- Foreman will be configured to know about the DNS domain 'localdomain'

Steps:

- Login to Foreman
- Navigate to 'Infrastructure > Domains'
- Add the domain 'localdomain' and associate Smart proxy 'foreman.localdomain'

Notes:

If the Puppet agent on the Foreman server has already run the domain will already be created but not associated.

Lab 3.4: Add DHCP configuration to Foreman

Objective:

- Foreman will be configured to know about the DHCP subnet

Steps:

- Login to Foreman
- Navigate to 'Infrastructure > Smart proxies'
- Add the subnet 'foreman' by importing from the Smart Proxy

Notes:

We will use the complete DHCP range the DHCP server provides.

Lab 4.1: Prepare PXE installation of CentOS

Objective:

- Prepare the installation of CentOS using PXE

Steps:

- Change the Installation media "CentOS mirror" to the local repo
- Associate the PXELinux template "Kickstart default PXELinux" with CentOS
- Associate the Provision template "Kickstart RHEL default" with CentOS
- Associate the operating system with the Partition table "Kickstart default", Installation media "CentOS mirror", select the Templates and set parameter "enable-puppetlabs-repo" to "true"

Lab 4.2: Prepare PXE installation of Debian

Objective:

- Prepare the installation of Debian using PXE

Steps:

- Change the Installation media "Debian mirror" to the local repo
- Create the Operating system "Debian" with Major version "8", Minor version "3", Description "Debia jessie", Family "Debian", Release name "jessie"
- Associate the PXELinux template "Preseed default PXELinux" with Debian
- Associate the Provision template "Preseed default" with Debian
- Associate the finish template "Preseed default finish" with Debian
- Associate the operating system with the Templates and set Architecture "x86_64", Partition table "Preseed custom LVM" and "Preseed default", Installation media "Debian mirror"

Lab 4.3: Create a virtual machine "pxe"

Objective:

- Create a virtual machine "pxe" for PXE installation

Steps:

- Open "Virtual Machine Manager" application
- Select "New virtual machine" from the menu or by pressing the button
- Select PXE boot
- Select "Linux" and "Red Hat Enterprise Linux 7.2" for CentOS or "Debian jessie" for Debian accordir to your preferences
- Keep the minimum requirements for RAM, CPU and Disk
- Name your VM "pxe" and select the network "foreman"
- Create the VM and immediately pause it so in the next lab the required configuration in Foreman can be created

Lab 4.4: Configure the system "pxe" in Foreman

Objective:

- Configure the system "pxe" in Foreman and start installation

Steps:

- Open Foreman's host dialog using "Host > New Host"
- On the Host tab name it "pxe" and select the Environment "production", Puppet CA "foreman.localdomain" and Puppet Master "foreman.localdomain"
- On the Interface tab click edit to configure the interface with the MAC address of the system create before, identifier "eth0", select Domain "localdomain" and Subnet "foreman" and keep the suggested IP address
- On the Operating system tab select the Architecture "x86_64", Operating System, Media, Partition table depending on your choice earlier and set a Root password of your choice
- Unpause the virtual machine

Lab 4.5: Prepare Compute resource libvirt

Objective:

- Prepare Compute resource libvirt

Steps:

- Install the Compute resource using the Foreman installer
- Create a passphraseless ssh-key for user foreman using ssh-keygen
- Copy the public key to the root account of the host using ssh-copy-id
- Configure the Compute resource in Foreman Web GUI

Lab 4.6: Create the virtual machine "compute" from Foreman

Objective:

- Create the virtual machine "compute" from Foreman Web GUI and start unattended installation

Steps:

- Open Foreman's host dialog using "Host > New Host"
- On the Host tab name it "compute" and select to deploy on the Compute resource, the Environmen Puppet CA and Master
- On the Interface tab click edit to configure the interface with identifier "eth0", select Domain and Subnet and keep the suggested IP address, for the Libvirt options choose the virtual network "foreman"
- On the Operating system tab select the Architecture, Operating System, Media, Partition table and set a Root password.
- On the Virtual Machine tab change the Storage type to "QCOW2"

Lab 4.7: Install and configure the Discovery plugin

Objective:

- Install and configure the Discovery plugin

Steps:

- Run the Foreman installer to install the Discovery plugin and download the image
- Adjust and deploy the PXE default configuration
- Enable the discovery widget in the dashboard

Lab 4.8: Create a virtual machine "discovery"

Objective:

- Create a virtual machine "discovery" for PXE installation

Steps:

- Open "Virtual Machine Manager" application
- Select "New virtual machine" from the menu or by pressing the button
- Select PXE boot
- Select "Linux" and "Red Hat Enterprise Linux 7.2" for CentOS or "Debian jessie" for Debian accordir to your preferences
- Keep the minimum requirements for RAM, CPU and Disk
- Name your virtual machine "discovery" and select the network "foreman"
- Create the virtual machine and when the PXE menu appears select "(discovery)"

Expected result:

The Discovery images boots, reports status "SUCCESS" on the console and appears in the Foreman Web GUI in the "Discovery widget".

Lab 4.9: Configure the system "pxe" in Foreman

Objective:

- Configure the system "pxe" in Foreman and start installation

Steps:

- Select the newly discoverd host form the widget
- On the Host tab name it "discovery" and select the Environment, Puppet CA and Master
- On the Interface tab click edit to configure the interface add the Domain "localdomain"
- On the Operating system tab select the Architecture, Operating System, Media, Partition table and set a Root password
- Submit to start the installation

Lab 4.10: Install and configure the Bootdisk plugin

Objective:

- Install and configure the Bootdisk plugin

Steps:

- Run the Foreman installer to install the Bootdisk plugin
- Associate iPXE template for operating systems

Lab 4.11: Reinstall the virtual machine "pxe"

Objective:

- Reinstall the virtual machine "pxe" from a host image

Steps:

- Set the Host "pxe" in "Build" mode and download the host image
- Configure virtual machine to boot from image by adding a "CDROM" device and selecting it as boot media
- Boot and reinstall the virtual machine

Lab 5.1: Import of Puppet classes

Objective:

- Make Puppet code available to Puppet and Foreman

Steps:

- Place Puppet modules found in "/home/training" on host.localdomain into "/etc/puppet/environments/production" on foreman.localdomain
- Import the Puppet classes in Foreman using "Configure > Classes"

Optional:

- Configure Foreman to ignore the classes from stdlib module by creating "/usr/share/foreman/config/ignored_environments.yml"

Expected result:

- Class "training::user" is available in the WebGUI and can be assigned to hosts and hostgroups

Lab 5.2: Parameterize and assign Puppet classes

Objective:

- Parameterize and assign Puppet classes to at least one host

Steps:

- Set defaults to the Smart class parameters provided by the imported class
- Assign the Puppet class in the host menu to one host

Lab 5.3: Trigger Puppet agent run and inspect the report

Objective:

- Trigger an Puppet agent run and inspect the report

Steps:

- Run the Puppet agent in test mode on the host you assigned the class
- Inspect the report of the Puppet agent run

Lab 6.1: LDAP Authentication

Objective:

- Allow the administrative accounts from the LDAP to work as Foreman admins

Steps:

- Configure the LDAP authentication including group synchronisation
- Add a administrative group to grant the administrative accounts from the LDAP privileges

Expected result:

- Login with the account "administrator" of the group "admins" with password "netways" to grant administrative privileges

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Details on the LDAP server:

- Server: foreman.localdomain
- Protocol: LDAP (Port 389/tcp)
- Schema: POSIX
- Base DN: dc=localdomain
- User DN: ou=users,dc=localdomain
- Group DN: ou=groups,dc=localdomain

Lab 6.2: Add unprivileged users

Objective:

- Grant access and privileges for some unprivileged users

Steps:

- Assign the role "Viewer" to the user "viewer"
- Create a role "Selfservice" to allow creation of new hosts and management of own hosts
- Assign the new role "Selfservice" to the user "selfservice"

Expected result:

- Login with the account "viewer" and password "netways" grants read-only privileges
- Login with the account "selfservice" and password "netways" allows to created new hosts

Lab 7.1: Templates

Objective:

- Import the Community templates

Steps:

- Install the Foreman Plugin Templates using the package "tfm-rubygem-foreman_templates"
- Run the synchronisation job with "foreman-rake templates:sync"

Expected result:

Additional templates with the prefix "Community" are available in the WebGUI.

Lab 7.2: DHCP Browser

Objective:

- Inspect DHCP reservations

Steps:

- Install the Foreman Plugin DHCP Browser using the package "tfm-rubygem-foreman_dhcp_browser'
- Inspect DHCP reservations of the subnet "foreman"

Expected result:

You will find one reservation for every host created earlier.

Lab 7.3: Column View

Objective:

- Add Architecture and Uptime to the "All Hosts" view

Steps:

- Install the Foreman Plugin Column View using the package "tfm-rubygem-foreman_column_view"
- Configure it to show the facts for architecture and uptime and restart the service

Expected result:

Additional columns are showing the values of the facts for architecture and uptime on all hosts which reported a Puppet run.

Lab 7.4: ABRT

Objective:

- Collect crash dumps on your Foreman server

Steps:

- Install the Foreman Plugin ABRT using the package "tfm-rubygem-foreman_abrt"
- Set up the Smart proxy by installing the package "rubygem-smart_proxy_abrt" and enabling it
- Configure the host to automatically send bug reports to the Smart Proxy
- Create a crash dump to test the setup with "will_segfault"

Expected result:

Crash reports show up in the Foreman WebGUI

Lab 7.5: OpenSCAP

Objective:

- Inspect the Security compliance of your system

Steps:

- Install the Foreman Plugin OpenSCAP using the package "tfm-rubygem-foreman_openscap"
- Install the Smart Proxy Plugin OpenSCAP using the package "rubygem-smart_proxy_openscap"
- Make the Puppet Module "foreman_scap_client" available
- Create a Policy for CentOS 7 and assign it to a host
- Initiate a Puppet agent run on the host
- Create a report on the host and upload it to the Smart proxy
- Upload the report from the Smart proxy to the Foreman

Expected result:

Compliance Report is available in the Foreman WebGUI.

Lab 7.6: Cockpit

Objective:

- Inspect your system using Cockpit integrated in the Foreman

Steps:

- Install Cockpit and enable the Cockpit websocket
- Install the Foreman Plugin Cockpit using the package "tfm-rubygem-foreman_cockpit"

Expected result:

Cockpit action menu shows up in the Host detail view and allows to inspect the system.

Lab 7.7: Remote Execution

Objective:

- Initiate a Puppet run on a remote system

Steps:

- Install the Foreman Plugin Remote Execution using the Foreman Installer
- Bring out the SSH key
- Initiate the Puppet run

Expected result:

Puppet run is executed on the remote system and report is uploaded

Lab 7.8: Remote Execution - Job Template

Objective:

- Create a Job Template "ping" to run the ping command on remote hosts

Steps:

- Create a Job Template to run ping with default values for count and target and input field for target
- Run it without input and inspect the output
- Run it with input and inspect the output

Lab 8.1: Working with the API

Objective:

- Use the API to query, create and update objects

Steps:

- Query the API for all subnets using the URL endpoint "/api/subnets"
- Query the API for all Debian hosts using the URL endpoint "/api/hosts" and the search "os=Debian" or "facts.osfamily=Debian"
- Create a hostgroup "training" using the API with valid defaults
- Change the root password for the hostgroup "training" using the API

Lab 8.2: Working with the CLI

Objective:

- Use the CLI to prepare a new Operatingsystem entry

Steps:

- Create the new Operatingsystem entry for "CentOS 6.8"
- Associate the template "Kickstart default PXELinux" and set it as default template
- Associate the template "Kickstart RHEL default" and set it as default template