

Engagement Journal

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Dec 2018

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# Objective

The purpose of this Engagement Journal is to document the step to properly configure and install Red Hat Openshift for a 30-40 hour proof-of-concept (POC) using Red Hat OpenShift Container Platform. The purpose of the POC is to determine the feasibility of using Red Hat OpenShift Container Platform as a target for internal and client workloads.

## Environment details

**Bastion host:**

* bastion.5101.example.opentlc.com, bastion.5101.internal

**Load balancer:**

* loadbalancer.5101.example.opentlc.com, loadbalancer.5101.internal

**Master nodes:**

* master1.5101.internal
* master2.5101.internal
* master3.5101.internal

**etcd:**

* master1.5101.internal
* master2.5101.internal
* master3.5101.internal

**Infrastructure nodes:**

* infranode1.5101.example.opentlc.com, infranode1.5101.internal
* infranode2.5101.example.opentlc.com, infranode2.5101.internal

**OpenShift worker nodes:**

* node1.5101.internal
* node2.5101.internal
* node3.5101.internal

**NFS server:**

* support1.5101.internal

# Getting files and installing OpenShift

1. Login into Bastion: bastion.5101.example.opentlc.com using putty

Make sure you have ssh keys uploaded on redhat provisioned environment and putty

1. Login to installation user:  
   sudo -i
2. Execute the following command to download files from GitHub:  
   git clone <https://github.com/towajahath/advanced_deployment_homework>
3. Execute the following command to change to the repository directory:  
   cd /root/advanced\_deployment\_homework
4. Execute the following command to install OpenShift:  
   ansible-playbook /root/advanced\_deployment\_homework/homework.yaml

# Files system structure

## Base Directory

### hosts file

The hosts file is Ansible’s inventory file for the playbook used to install OpenShift Container Platform. The inventory file describes the configuration for your OpenShift Container Platform cluster. You must replace the default contents of the file with your desired configuration. To update /etc/ansible/hosts, please refer to the Inventory file documentation for more information.   
<https://docs.openshift.com/container-platform/3.11/install/configuring_inventory_file.html>.

### cleanup.yaml

This yaml is used to uninstall OpenShift from the system and clean of residual files.

### homework.yaml

This is the main yaml used to install OpenShift on the system. It does the following:

* Updates the GUID in .bashrc on all servers
* Verifies the installation of Docker
* Verifies NFS shared volume
* Installs the packages and configures authentication
* Call the generate\_inventory.sh to setup the hosts file
* Call the pre-requisites yaml to verify the code before deploying
* Installs OpenShift
* Copies the .kube directory to bastion
* Call the script to create the Persistent Volumes
* Restarts the NFS servers
* Calls the scripts to run the smoke-test
* Sets up the Jenkins pipeline
* Sets up the project defaults to include limits ranges
* Restarts the masters API and Controllers
* Creates the projects and users
* Add labels to users and projects
* Assigns users to groups and groups to projects for multitenancy
* Removes the self-provisioned role from the users

## Scripts directory

### cicd.sh

This script is used to install the Continuous Integration/Continuous Deployment. The projects are created, policies are added to the projects, install the Jenkins-Persistent app, and then start the pipeline.

### create\_pvs.sh

This script creates 200 persistent volumes on the NFS server at */svr/nfs/user-vols/* and sets proper permissions.

### generate\_inventory.sh

This script copies the generified host file to */etc/ansible/hosts*, updates the GUID variable in .bashrc, updates GUD variable in the hosts file, and pushes the file to all the servers.

### nodejs\_mongo\_app.sh

This script is used to perform a smoke-test on the system after OpenShift installs by creating a smoke-test project, creating a nodejs-mongo-persistent app, and validating whether the smoke test passed or failed. If the smoke test fails, it returns a failed return code to the installation yaml.

### pvs\_10Gsize.sh

This script will set up 25 of the persistent volumes to be 10 GB in size.

### pvs\_5Gsize.sh

This script will set up 25 of the persistent volumes to be 5 GB in size.

## Yaml Directory

### cicd-template.yaml

This template is used to configure the continuous integration/continuous deployment projects, setup the pipeline, define the build configuration, and configure the ConfigMap.

### project-request.yaml

This yaml is used to set the default templates for all projects to include Network policies, Limit ranges, and Role bindings.