VEDITHTECH

Devops:

Course Overview

The DevOps training helps you become an expert in the principles of continuous development and deployment, automation of configuration management, inter-team collaboration, and IT service agility, using DevOps tools like Git, Docker, Jenkins, Cucumber, Ansible, TeamCity, and Nagios.
Its a culture which promotes collaboration between Development and Operations Team to deploy code to production faster in an automated & repeatable way.In simple words, DevOps can be defined as an alignment of development and IT operations with better communication and collaboration

Course Content

ADVANCED AUTOMATION : ANSIBLE BEST PRACTICES

Develop with recommended practices

Demonstrate and implement recommended practices for effective and efficient use of Ansible for automation.

Manage inventories

Use advanced features of Ansible to manage inventories.

Manage task execution

Control and optimize the execution of tasks by Ansible Playbooks.

Transform data with filters and plugins

Populate, manipulate, and manage data in variables using filters and plugins.

Coordinate rolling updates

Minimize downtime and ensure maintainability and simplicity of Ansible Playbooks by using the advanced features of Ansible to manage rolling updates.

Install and access Red Hat Ansible Tower

Explain what Red Hat Ansible Tower is and demonstrate a basic ability to navigate and use its web user interface.

Manage access with users and teams

Create user accounts and organize them into teams in Red Hat Ansible Tower, then assign the users and teams permissions to administer and access resources in the Ansible Tower service.

Manage inventories and credentials

Create inventories of machines to manage, then configure credentials necessary for Red Hat Ansible Tower to log in and run Ansible jobs on those systems.

Manage projects and launching Ansible jobs

Create projects and job templates in the web UI, using these tools to launch Ansible Playbooks that are stored in Git repositories in order to automate tasks on managed hosts.

Construct advanced job workflows

Use advanced features of job templates to improve performance, simplify customization of jobs, launch multiple jobs, schedule automatically recurring jobs, and provide notification of job results.

Communicate with APIs using Ansible

Interact with REST APIs with Ansible Playbooks and control Red Hat Ansible Tower using its REST API.

Manage advanced inventories

Administer inventories that are loaded from external files or generated dynamically from scripts or the Ansible Tower smart inventory feature.

Create a simple CI/CD pipeline with Ansible Tower

Build and operate a proof-of-concept CI/CD pipeline based on Ansible Automation and integrating Red Hat Ansible Tower.

Maintain Ansible Tower

Perform routine maintenance and administration of Red Hat Ansible Tower.

Perform a comprehensive review

Demonstrate skills learned in this course by configuring and operating a new organization in Ansible Tower using a provided specification, Ansible projects, and hosts to be provisioned and managed.

ANSIBLE FOR NETWORK ADMINISTRATION

Deploy Ansible

Install Ansible and create Ansible inventories.

Run commands and plays

Execute ad hoc commands and prepare Ansible playbooks.

Parameterize Ansible

Control tasks with loops and conditions.

Administer Ansible

Safeguard information with Ansible Vault and manage inventories.

Automate simple network operations

Gather network information with Ansible and configure network devices.

Automate complex operations

Solve new MACD challenges and overcome real-world challenges.

AUTOMATION WITH ANSIBLE AND ANSIBLE TOWER

Introduce Ansible
- Deploy Ansible
- Implement playbooks
- Manage variables and inclusions
- Implement task control
- Implement Jinja2 templates
- Implement roles
- Configure complex playbooks
- Implement Ansible Vault
- Troubleshoot Ansible
- Install Ansible Tower and describe Ansible Tower's architecture
- Create users and teams for role-based access control
- Create and manage inventories and credentials
- Manage projects for provisioning with Ansible Tower
- Construct advanced job workflows
- Update inventories dynamically and compare inventory members
- Maintenance and administration of Ansible Tower

AUTOMATION WITH ANSIBLE II

Install and access Ansible Tower
Explain what Red Hat Ansible Tower is and navigate and use its web user interface.

Manage access with users and teams
Create user accounts and organize them into teams in Red Hat Ansible Tower, and assign the users and teams permissions to administer and access resources in the Ansible Tower service.

Manage inventories and credentials
Create inventories of machines to manage, and configure credentials necessary for Red Hat Ansible Tower to log in and run Ansible jobs on those systems.

Manage projects and launch Ansible jobs
Create projects and job templates in the web UI, using them to launch Ansible playbooks that are stored in Git repositories in order to automate tasks on managed hosts.

Construct advanced job workflows
Use advanced features of job templates to improve performance, simplify customization of jobs, launch multiple jobs, schedule automatically recurring jobs, and provide notification of job results.

Manage advanced inventories
Manage inventories that are loaded from external files or generated dynamically from scripts or the Ansible Tower smart inventory feature.

Perform maintenance and routine administration of Ansible Tower
Demonstrate ability to deliver routine maintenance and administration of Ansible Tower.

Comprehensive review
Demonstrate skills learned in this course by configuring and operating a new organization in Ansible Tower using a provided specification, Ansible projects, and hosts to be provisioned and managed.

AUTOMATION WITH ANSIBLE

Introduction to Ansible
Describe Ansible concepts and install Red Hat Ansible Engine.

Deploy Ansible
Configure Ansible to manage hosts and run ad hoc Ansible commands.

Implement playbooks
Write a simple Ansible playbook and run it to automate tasks on multiple managed hosts.

Manage variables and facts
Write playbooks that use variables to simplify management of the playbook and facts to reference information about managed hosts.

Implement task control
Manage task control, handlers, and task errors in Ansible playbooks.

Deploy files to managed hosts
Deploy, manage, and adjust files on hosts managed by Ansible.

Manage large projects
Write playbooks that are optimized for larger, more complex projects.

Simplify playbooks with roles
Use Ansible roles to develop playbooks more quickly and to reuse Ansible code.

Troubleshoot Ansible
Troubleshoot playbooks and managed hosts.

Automate Linux administration tasks
Automate common Linux system administration tasks with Ansible.

Comprehensive review
Demonstrate skills learned in this course by installing, optimizing, and configuring Ansible for the management of managed hosts.

CONFIGURATION MANAGEMENT WITH PUPPET

Course introduction
Introduction to the course.

Identify system administration functions in Puppet
Identify system administration functions in Puppet code.

Puppet architecture
Describe the Puppet architecture and describe a state model.

Implement a Puppet manifest
Build, validate, and deploy a Puppet manifest.

Troubleshoot Puppet manifests
Find documentation and diagnose errors in Puppet manifests.

Implement Git
Implement Git to manage software.

Find information with Facter
View information about systems using Facter.

Implement Puppet modules
Create Puppet modules and implement classes in a manifest.

Implement relationships in a Puppet module
Implement namespaces, relationships, and dependencies in a Puppet module.

Implement variables and conditionals in a Puppet module
Implement variables and conditionals in a Puppet module.

Identify advanced system administration functions in Puppet
Identify advanced system administration functions in Puppet code.

Implement Puppet
Deploy and configure a Puppet master and a Puppet client.

Implement external Puppet modules
Implement Puppet modules from Puppet Forge.

Implement Puppet in a DevOps environment
Implement Puppet in a DevOps environment.

Implement Puppet in Red Hat Satellite 6
Implement Puppet in a Red Hat Satellite 6 environment

CONTAINER ADOPTION BOOT CAMP

Create custom container images
Create containers, manage containers, and manage container images.

Deploy containerized applications
Customize containers and deploy on Red Hat OpenShift.

Troubleshoot containerized applications
Troubleshoot Red Hat OpenShift deployments.

Explore Red Hat OpenShift networking concepts
Describe Red Hat OpenShift networking concepts and troubleshoot with CLI.

Manage Red Hat OpenShift resources
Control access to Red Hat OpenShift resources, implement persistent storage, and manage application deployments.

Containerize applications
Understand deployment methods, designing containers, and integrated registry and image streams.

Manage application deployments
Manage advanced application deployments and Red Hat OpenShift templates.

Design a highly available cluster
Design and install a highly available cluster, custom certificates, and log aggregation, in addition to gaining an understanding of Gluster container-native storage, managing system resources, and configuring advanced networking.

Implement microservice architecture
Describe microservice architectures, deploy microservices, and implement with MicroProfile.

Test microservices
Run microservices, inject configuration data, and perform health checks.

Implement fault tolerance
Apply fault tolerance, develop an API gateway for a series of microservices, and secure with JWT.

Secure microservices with JWT
Use the JSON Web Token specification to secure a microservice.

Create microservices with Red Hat OpenShift Application Runtimes
Receive an introduction to OpenShift Application Runtimes and Fabric8.

Install Red Hat OpenShift Container Platform
Install, monitor, and manage OpenShift Container Platform.

Customize source-to-image builds
Tailor source-to-image builds and migrate applications to Red Hat OpenShift.

Develop and deploy runtimes
Employ the WildFly Swarm, Vert.x, and Spring Boot runtimes to develop and deploy microservices.

Monitor microservices
Track the operation of a microservice

CONTAINERS, KEBERNETES, AND RED HAT OPEN SHIFT ADMINISTRATION

- Getting started with container technology
- Describe how software can run in containers orchestrated by OpenShift Container Platform.
- Creating containerized services
- Provision a server using container technology.
- Managing containers
- Manipulate pre-build container images to create and manage containerized services.
- Managing container images
- Manage the lifecycle of a container image from creation to deletion.
- Creating custom container images
- Design and code a Dockerfile to build a custom container image.
- Deploying containerized applications on OpenShift
- Deploy single container applications on OpenShift Container Platform.
- Deploying multi-container applications
- Deploy applications that are containerized using multiple container images.
- Troubleshooting containerized applications
- Troubleshoot a containerized application deployed on OpenShift.
- Comprehensive review of Introduction to Container, Kubernetes, and Red Hat OpenShift
- Demonstrate how to containerize a software application, test it with Docker, and deploy it on an OpenShift cluster.
- Introducing Red Hat OpenShift Container Platform
- List the features and describe the architecture of the Openshift Container Platform.
- Installing OpenShift Container Platform
- Install OpenShift and configure the cluster.
- Describing and exploring OpenShift networking concepts
- Describe and explore OpenShift networking concepts.
- Executing commands
- Execute commands using the command-line interface.
- Controlling access to OpenShift resources
- Control access to OpenShift resources.
- Allocating persistent storage
- Implement persistent storage.
- Managing application deployments
- Manipulate resources to manage deployed applications.
- Installing and configuring the metrics subsystem
- Install and configure the metrics gathering system.
- Managing and monitoring OpenShift Container Platform
- Manage and monitor OpenShift resources and software.
- Comprehensive review of Red Hat OpenShift Administration I
- Install, configure, and deploy an application on a cluster.

DEVOPS CULTURE AND PRACTICE ENABLEMENT

What is DevOps?
Brainstorm and explore what principles, practices, and cultural elements make up a DevOps model for software design and development.

Pairing and mobbing
Discuss and experience two foundational practices: pair programming and mob programming.

Retrospectives, information radiators, and team sentiment
Examine the value of conducting retrospectives, visualizing work, and assessing team sentiment.

Impact mapping
Discuss the impact mapping discovery practice.

Agile practices
Cover agile practices, including sprint planning, daily standup, showcase, retrospective, and backlog refinement.

Value stream and process mapping
Delve into the practices of value stream mapping and metric-based process mapping.

Continuous integration, deployment, and delivery
Explore the foundational practices of continuous integration, continuous deployment, and continuous delivery.

Event storming
Learn how to use the event storming discovery practice.

User story mapping and value slicing
Examine the user story mapping, value slicing, and empathy mapping practices.

Automated testing, part 1
Develop an understanding of the test-driven development and business-driven development foundational practices, often referred to as automated testing.

Automated testing, part 2
Complete the automated testing lab begun in part 1.

Pipelines as code
Explore continuous integration/continuous delivery pipelines using Jenkins.

Non-functional testing
Discover the merits of non-functional testing.

Build monitoring
Understand how to monitor builds and graphically represent their status as an information radiator.

Demo day
Experiment with the optimal methods of producing a showcase and bring the class to a close.

OPENSHIFT ENTERPRISE ADMINISTRATION

Introduction to Red Hat OpenShift Container Platform
List the features and describe the architecture of the Openshift Container Platform.

Install OpenShift Container Platform
Install OpenShift and configure the cluster.

Explore OpenShift networking concepts
Describe and explore OpenShift networking concepts.

Execute commands
Execute commands using the command-line interface.

Manage OpenShift resources
Control access to OpenShift resources.

Allocate persistent storage
Implement persistent storage.

Manage application deployments
Manipulate resources to manage deployed applications.

Metrics subsystem
Install and configure the metrics-gathering system.

Manage and monitor
Manage and monitor OpenShift resources and software.

RED HAT OPEN SHIFT ADMINISTRATION II

- Design a highly available cluster
- Design an OpenShift cluster that supports high availability and resiliency.
- Prepare to install an HA cluster
- Configure the advanced installer and prepare the cluster environment for HA installation.
- Configure OpenShift to use custom certificates
- Configure the OpenShift cluster to use custom certificates.
- Build an HA cluster
- Use the advanced installation method to build an HA OpenShift cluster.
- Provision persistent storage
- Describe storage providers, configure a provider, create a storage class, and test the configuration.
- Enable log aggregation
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- Maintain an OpenShift cluster
- Perform recurring maintenance activities on an OpenShift cluster.
- Manage system resources
- Manage operating system and cluster resources for optimal performance.
- Configure security providers
- Configure security providers and advanced security options.
- Configure networking options
- Configure various advanced networking features and options.

RED HAT OPEN SHIFT ADMINISTRATION II

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