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DevOps Engineer Masters Program

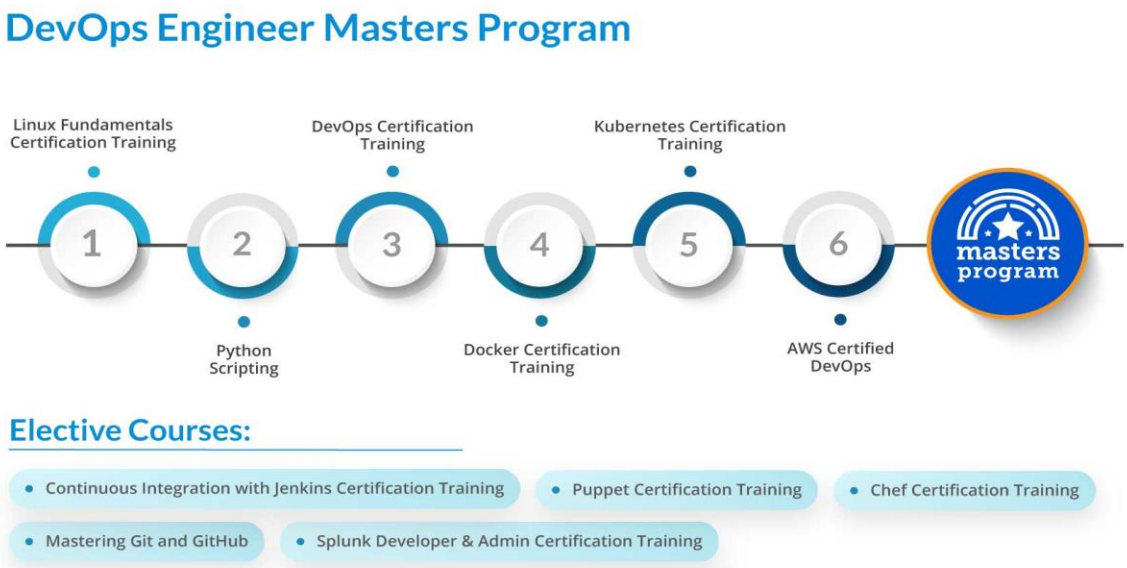
About Edureka

Edureka is one of the world's largest and most effective online education platform for technology professionals. In a span of 10 years, 100,000+ students from over 176 countries have upskilled themselves with the help of our online courses. Since our inception, we have been dedicated to helping technology professionals from all corners of the world learn Programming, Data Science, Big Data, Cloud Computing, DevOps, Business Analytic, Java & Mobile Technologies, Software Testing, Web Development, System Engineering, Project Management, Digital Marketing, Business Intelligence, Cybersecurity, RPA and more.

We have an easy and affordable learning solution that is accessible to millions of learners. With our learners spread across countries like the US, India, UK, Canada, Singapore, Australia, Middle East, Brazil, and many others, we have built a community of over 1 million learners across the globe.

About the Program

This Master's Program makes you proficient in DevOps principles like CI/CD, Continuous Monitoring and Continuous Delivery, using tools like Puppet, Nagios, Chef, Ansible, Docker, Git & Jenkins. It includes training on Linux, Python, Docker, AWS DevOps Certification Training and Kubernetes. The curriculum has been determined by extensive research on 5000+ job descriptions across the globe



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Linux Fundamentals Certification Training

Course Curriculum

About the Course

Edureka's Linux Fundamentals Certification Course will help you gain a strong foundation in Linux from scratch. This course will help you master important Linux concepts such as Linux installations, Packages, Architecture, File System, User Management, Scripting Data & various useful commands and utilities with sufficient hands-on. This Linux Fundamentals certification course is also a gateway towards Linux Kernel, Linux Administration and Linux programming.

Course Outline

Module 1: Overview of Linux

Learning Objectives: In this module, we will learn about Linux distribution, shell scripting, some basic and advanced Linux commands and package management.

Module 2: Linux for Software Development

Learning Objectives: In this module, we will learn about various software development tools available on Linux.

Module 3: Security Administration and Virtualization

Learning Objectives: In this module, we will learn about Linux security administration and Virtualization.

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Python Scripting Certification Training

Course Curriculum

About the Course

Python Scripting allows programmers to build applications easily and rapidly. This course is an introduction to Python scripting, which focuses on the concepts of Python. It will help you to perform operations on variable types. You will learn the importance of Python in real time environment and will be able to develop applications based on Object Oriented Programming concepts.

Course Outline

Module 1: Introduction to Python

Learning Objectives: Give a brief idea of what Python is and touch on the basics.

Topics

- Overview of Python
- The Companies using Python
- Other applications in which Python is used
- Discuss Python Scripts on UNIX/Windows
- Variables

- Operands and Expressions
- Conditional Statements
- Loops
- Command Line Arguments
- Writing to the screen

Hands-On

- Creating “Hello World” code
- Variables
- Demonstrating Conditional Statements
- Demonstrating Loops

Module 2: Sequences and File Operations

Learning Objectives: Learn different types of sequence structures, related operations, and their usage. Also learn diverse ways of opening, reading, and writing to files.

Topics

- Python files I/O Functions
- Lists and related operations
- Tuples and related operations
- Strings and related operations
- Sets and related operations
- Dictionaries and related operations

Hands-On

- Tuple - properties, related operations, compared with list
- List - properties, related operations

- Dictionary - properties, related operations
- Set - properties, related operations

Module 3: Deep Dive – Functions, OOPs, Modules, Errors and Exceptions

Learning Objectives: In this Module, you will learn how to create generic python scripts, how to address errors/exceptions in code and finally, how to extract/filter content using regex.

Topics

- Functions
- Function Parameters
- Global variables
- Variable scope and Returning Values
- Lambda Functions
- Object Oriented Concepts
- Standard Libraries
- Modules Used in Python (OS, Sys, Date and Time etc.)
- The Import statements
- Module search path
- Package installation ways
- Errors and Exception Handling
- Handling multiple exceptions

Hands-On

- Functions - syntax, arguments, keyword arguments, return values
- Lambda - features, syntax, options, compared with the functions
- Sorting - sequences, dictionaries, limitations of sorting
- Errors and exceptions - types of issues, remediation
- Packages and module - modules, import options, syspath

Module 4: Introduction to NumPy & Pandas

Learning Objectives: This Module helps you get familiar with basics of statistics, different types of measures and probability distributions, and the supporting libraries in Python that assist in these operations.

Topics

- NumPy - arrays
- Operations on arrays
- Indexing slicing and iterating
- Reading and writing arrays on files
- Pandas - data structures & index operations
- Reading and Writing data from Excel/CSV formats into Pandas

Hands-On

- NumPy library- Installation, Creating NumPy array, operations performed on NumPy array
- Pandas library- Installation, creating series and dataframes, Importing and exporting data

Module 5: Data Visualisation

Learning Objectives

In this Module, you will learn in detail about Data Visualization.

Topics

- Matplotlib library
- Grids, axes, plots

- Markers, colours, fonts, and styling
- Types of plots - bar graphs, pie charts, histograms
- Contour plots

Hands-On:

- Matplotlib - Installation, Using Scatterplot, histogram, bar graph, pie chart to show information, Styling of Plot.

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DevOps Certification Training

Course Curriculum

About the Course

Edureka's DevOps Training Program will provide you with in-depth knowledge of various DevOps tools including Git, Jenkins, Docker, Ansible, Terraform, Kubernetes, Prometheus, and Grafana.

This DevOps Certification training is completely hands-on and designed in a way to help you become a certified practitioner through best practices in Continuous Development, Configuration Management and Continuous Integration, and finally, Continuous Monitoring of software throughout its development life cycle.

Course Outline

Module 1: Overview of DevOps

Goal: In this module, you will be introduced to the DevOps environment.

Objectives:

After completing this module, you should be able to

- Understand the benefits of DevOps over other software development processes
- Gain insights into the DevOps environment
- Get an overview of different DevOps Tools
- Get a picture of the working of the DevOps Delivery Pipeline

Topics:

- Introduction to DevOps
- Benefits of working in a DevOps environment
- DevOps Lifecycle
- DevOps Stages
- DevOps Delivery Pipeline

Module 2: Version Control with Git

Goal: In this module, you will gain insights into Source Control Management and learn the functionalities of Git.

Objectives

After completing this module, you should be able to

- Understand Version Control
- Perform management of files for small as well as large projects
- Perform various Git commands such as git add, git fetch, git commit, git init, etc.
- Work with remote repositories

Topics

- Version Control
- Git Introduction
- Git Installation
- Commonly used commands in Git
- Working with Remote repository

Hands-On

- Git Common Commands
- Working with Remote Repository

Module 3: Git, Jenkins & Maven Integration

Goal: In this module, you will learn about the different actions performed through Git and will be introduced to Jenkins and Maven.

Objectives

After completing this module, you should be able to

- Execute branching and merging operations
- Perform various Git commands
- Understand Maven Architecture and dependencies
- Learn about Continuous Integration & its importance
- Understand Jenkins and its features

Topics

- Branching and merging in Git
- Merge Conflicts
- Stashing, Rebasing, Reverting and Resetting
- Git Workflows
- Introduction to Maven
- Maven Architecture
- Introduction to Continuous Integration
- Introduction to Jenkins

Hands-On

- Branching and Merging
- Merge Conflicts
- Stashing, Rebasing, Reverting, and Reseting
- Configuring Maven

Module 4: Continuous Integration using Jenkins

Goal: In this module, learn how to perform Continuous Integration by building applications with the help of Maven and create deployment pipelines using Jenkins.

Objectives

After completing this module, you should be able to

- Managing authorization in Jenkins
- Jenkins notification management
- Master-slave architecture in Jenkins
- Add a slave node to Jenkins master

- Build and deploy codes using Jenkins
- Build pipeline plugin in Jenkins
- Use Declarative pipeline in Jenkins

Topics

- Jenkins Architecture
- Plugin Management in Jenkins
- Jenkins Security Management
- Notification in Jenkins
- Jenkins Master-slave architecture
- Jenkins Delivery Pipeline
- Jenkins Declarative pipeline

Hands-On

- Create pipeline view using DevCompile and QAUnitTest
- Adding Slave node in Jenkins
- Build Pipeline project using Groovy script

Module 5: Configuration Management Using Ansible

Goal: Learn how to manage and configure your infrastructure using Ansible Ad-Hoc commands, Playbooks, and Roles.

Objectives

After completing this module, you should be able to

- Utilize Ansible CLI
- Execute Ansible Ad-Hoc Commands for one-off tasks
- Automate host servers using Ansible Playbooks
- Use Variables in Playbooks
- Using Handlers

Topics

- Introduction to Configuration Management
- Infrastructure as Code
- Introduction to Ansible
- Ansible Architecture
- Inventory Management

- Ansible Modules
- AD-HOC Commands
- Ansible Playbooks
- Ansible Roles

Hands-On

- Ad-Hoc Commands
- Running a Simple Playbook
- Using Variables and handlers
- Using Ansible Roles

Module 6: Containerization using Docker Part – I

Goal: This module introduces learners to the core concepts and technology behind Docker. Learn in detail about containers and various operations performed on them.

Objectives

After completing this module, you should be able to

- Understand Containerization
- Learn the evolution of virtualization to containers
- Understand the Docker Architecture
- Perform Various actions using Docker CLI
- Bind container ports to the Machine ports
- Run containers in different modes
- Write and build a Dockerfile to create a Docker Image

Topics

- Containerization
- Namespaces
- Docker
- Docker Architecture
- Container Lifecycle
- Docker CLI
- Port Binding
- Detached and Foreground Mode
- Dockerfile
- Dockerfile Instructions
- Docker Image

Hands-On

- Docker CLI Commands
- Port Binding
- Starting Containers in Different Modes
- Writing a Dockerfile to Create an Image

Module 7: Containerization using Docker Part – II

Goal: Learn how to use Docker Hub registry, deploy a multi-tier application using Docker Compose, and create a swarm cluster.

Objectives

After completing this module, you should be able to

- Use Docker Hub to store custom Images
- Store data in Container Volumes for persistent storage
- Setup Docker Compose
- Deploy a multi-container application using Docker Compose
- Deploy a Swarm Cluster

Topics

- Docker Registry
- Container Storage
- Volumes
- Docker Compose
- Docker Swarm

Hands-On

- Setting up Docker Hub
- Docker Volumes
- Installing Docker Compose
- Installing a Multi-Container Application using Compose
- Running Docker in Swarm Mode

Module 8: Orchestration using Kubernetes Part - I

Goal: Learn In this module, you will learn about Container Orchestration and Basic of container management using Kubernetes.

Objectives

After completing this module, you should be able to

- Understand Container Orchestration
- Learn about Kubernetes Core Concept
- Deploy Pods
- Create Deployments to manage Pods
- Launch DaemonSets for Background applications
- Update and Rollback your Deployments
- Scale your containerized Applications

Topics

- Introduction to Container Orchestration
- Kubernetes Core Concepts
- Understanding Pods
- ReplicaSet and Replication Controller
- Deployments
- DaemonSets
- Rolling Updates and Rollbacks
- Scaling Application

Hands-On

- Kubectl Common Commands
- Deployments
- DaemonSets
- Rolling-update and Rollbacks
- Scaling in Kubernetes

Module 9: Orchestration using Kubernetes Part - II

Goal: Learn and deploy different service discovery mechanisms, utilize Volumes for persistent storage and deploy StatefulSets for stateful applications.

Objectives

After completing this module, you should be able to

- Deploy different Kubernetes Services
- Utilize Volumes to store Persistent Data
- Create Persistent Volume Claims to attach volumes to Pods
- Understand Persistent Volume Claims Primitives
- Use Headless Services in Stateful Sets
- Deploy Helm Charts

Topics

- Services
- Persistent Storage in Kubernetes
- Primitives for PersistentVolumeClaims
- Secrets and ConfigMaps
- Headless Services
- StatefulSets
- Helm Charts

Hands-On

- Deploying Services
- Persistent Volumes and Persistent Volume Claims
- StatefulSets
- ConfigMaps and Secrets
- Helm Charts

Module 10: Monitoring using Prometheus and Grafana

Goal: In this module, you will learn how to collect, monitor, and visualize data using Prometheus and Grafana.

Objectives

After completing this module, you should be able to

- Understand Continuous Monitoring
- Use Prometheus to monitor services
- Create an alerting mechanism using Prometheus
- Deploy Grafana dashboards to visualize data
- Integrate Prometheus and Grafana to monitor a full pipeline

Topics

- Introduction to Prometheus and Grafana

- Prometheus and Grafana Setup
- Monitoring using Prometheus
- Dashboard Visualization using Grafana
- Creating a Dashboard to monitor the Pipeline

Hands-On

- Monitoring Service using Prometheus
- Alerting using Prometheus
- Grafana Dashboards
- Monitoring a Pipeline

Module 11: Provisioning using Terraform Part - I

Goal: Learn how to provision and manage infrastructure on a Cloud Platform (AWS) using Terraform Configuration Files.

Objectives

After completing this module, you should be able to

- Understand Provisioning using Terraform
- Learn the Difference between Terraform vs Ansible
- Understand Terraform Architecture
- Deploy a Terraform Configuration File
- Use Basic Terraform Commands
- Manage Terraform Resources

Topics

- Introduction to Terraform
- Terraform vs Ansible
- Terraform Architecture
- Terraform Configuration
- Terraform Common Commands
- Managing Terraform Resources

Hands-On

- Setting Up AWS and Terraform
- Executing a Terraform Configuration
- Managing Terraform Resources
- Referencing Terraform Resources

Module 12: Provisioning using Terraform Part - II

Goal: Use Terraform State commands to manage the current state of your infrastructure. Deploy a fully usable and working infrastructure using Terraform.

Objectives

After completing this module, you should be able to

- Perform Terraform State Commands
- Deploy a Terraform Project on AWS

Topics

- Terraform State
- Terraform Project

Hands-On

- Terraform State Commands
- Terraform Project

Module 13: Selenium (Self -Paced)

Goal: In this module, you will learn about selenium and how to automate your test cases for testing web elements. You will also get introduced to X-Path, TestNG and integrate Selenium with Jenkins.

Objectives

After completing this module, you should be able to

- Learn and install Selenium
- Create Test Cases in Selenium WebDriver
- Utilize X-Path and TestNG to locate elements
- Execute code on several browsers using Selenium suite of tools
- Integrate Selenium with Jenkins

Topics

- Introduction to Selenium
- Why Selenium?
- Selenium – Webdriver
- Creating Test Cases in Selenium WebDriver (Waits)
- What and why X-Path
- Handling different controls on Webpage

- Framework in Selenium
- Selenium Integration with Jenkins
- Implementation of Selenium in the Edureka's Project

Hands-On

- Installing Selenium
- Creating Test Cases in Selenium WebDriver
- Integrating Selenium with Jenkins

Module 14: Nagios (Self- Paced)

Goal: Learn how to continuously monitor your tasks using various plugins and implementing Nagios Commands

Objectives

After completing this module, you should be able to

- Operate Continuous Monitoring tools
- Use various plugins and objects associated with Nagios
- Implement Nagios commands

Topics

- Introduction to Continuous Monitoring
- Introduction to Nagios
- Installing Nagios
- Nagios Plugins(NRPE) and Objects
- Nagios Commands and Notification

Hands-On

- Installing Nagios
- Monitoring of different servers using Nagios

Module 15: DevOps on Cloud

Goal: Learn about various cloud services and service providers, also get the brief idea of how to implement DevOps using AWS

Objectives

After completing this module, you should be able to

- Understand about cloud and its advantages
- Learn about Various cloud computing services
- Get an idea of how to implement DevOps using AWS

Topics

- Why Cloud?
- Introduction to Cloud Computing
- Why DevOps on Cloud?
- Introduction to AWS
- Various AWS services
- DevOps using AWS

Module 16: AWS EC2 and IAM

Goal: Get a brief idea of how Security and EC2 Compute service works in AWS Cloud.

Objectives

After completing this module, you should be able to

- Describe AWS Global Infrastructure and its Benefits
- Sign-up an AWS free-tier account
- Work with AWS Management Console and AWS CLI
- Work with IAM Service
- Understand Virtualization
- Work with EC2
- Analyze various EC2 box configurations available

Topics

- Virtualization
- Amazon Web Services (AWS)
- Benefits of AWS
- AWS Global Infrastructure
- AWS: IAM
- Components of IAM
- Managing users with IAM
- Amazon Machine Image (AMI)

- Security Groups in AWS Virtualization
- Amazon Elastic Compute Cloud (EC2) and Its Benefits
- Networking components associated with EC2
- Instance Store

Hands-On

- Signing up for a Free Tier Account with AWS
- Creating New User to Log in to AWS Management Console
- Creating Policies for New User to Have All Admin or Limited Privileges
- Different Approaches to connect to an EC2 instance
- Creating a Custom AMI
- Host your Website Inside your EC2 Instance
- To Attach EFS Volume to an EC2 Instance
- Login to AWS Console via MFA

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Docker Certification Training

Course Curriculum

About the Course

Edureka's Docker Certified Associate Training Course is designed keeping in mind the needs of both new learners and professionals looking to appear for the Docker Certified Associated course. You will learn the origins of the containerization technology and move on to create and deploy your own containerized applications. Get hands-on experience in using the different storage strategies, deploying multi-container applications using Docker Compose, and managing container clusters using Docker Swarm. Throughout this online Instructor-led Docker Certified Associate training, you will be working on real-life industry use cases

Course Outline

Module 1: Introduction to Containerization

Learning Objectives: Understand the origins and the need for containerization in modern applications. Learn how Docker emerged as one of the best container platforms in the industry and about the technology behind it.

Topics

- Containerization
- History of Containers
- Namespaces and Cgroups
- Containers vs Virtual Machines
- Types of Containers
- Introduction to Docker
- Docker Architecture

- Container Lifecycle
- Docker CE vs Docker EE

Module 2: The Docker Engine

Learning Objectives: Set up the Docker Engine on Google Compute Engine Instance and perform various operations on Containers. Configure logging drivers, bind container ports, and write restart policy for containers.

Topics

- Docker Engine
- Configuring Logging Drivers
- Docker Terminology
- Port Binding
- Detached vs Foreground Mode
- Docker CLI
- Docker Exec
- Restart Policy

Hands-On:

- Setting up Docker Engine
- Upgrading Docker Engine
- Setting up logging drivers in Docker
- Port Binding
- Starting Containers in different modes
- Docker CLI Commands
- Docker Exec Commands
- Restart Policy in Docker
- Removing Containers

Module 3: Image Management and Registry

Learning Objectives: Learn how to write a Dockerfile and create custom images by building the Dockerfile. Create and manage remote registry to store your custom images.

Topics:

- Dockerfile
- Dockerfile Instructions
- Build Context

- Docker Image
- Docker Registry

Hands-On:

- Write a Dockerfile to create an Image
- Docker Image Tags
- Setting up Docker Hub
- Configuring Local Registry
- Removing Images from the Registry

Module 4: Storage in Docker

Learning Objectives: Create persistent storage solutions for stateful containerized applications. Utilize different methods for storing container data and perform image cleanup for optimization

Topics:

- Docker Storage
- Types of Persistent Storage
- Volumes
- Bind Mounts
- tmpfs Mount
- Storage Drivers
- Device Mapper
- Docker Clean Up

Hands-On:

- Deploy Docker Volumes
- Deploy Bind Mounts
- Use tmpfs mounts
- Configure Device Mapper
- Docker Clean Up

Module 5: Orchestration in Docker

Learning Objectives: Create and run multi-container applications using Docker Compose and manage clusters of Docker nodes using Docker Swarm.

Topics:

- Docker Compose
- Docker Swarm
- Docker Service
- Service Placement
- Rolling Update and Rollback
- Docker Stack

Hands-On:

- Deploy a Multi-container Application using Compose
- Running Docker in Swarm mode
- Deploying a Service in Swarm
- Scale Services
- Service Placement
- Rolling Updates and Rollbacks
- Docker Stack

Module 6: Networking and Security

Learning Objectives: Configure Docker network using various built-in network drivers such as a Network Bridge and Overlay Network. Secure your environment by authenticating images using Docker Content Trust.

Topics:

- Docker Networking
- Network Drivers
- Bridge Network
- Overlay Network
- Host and Macvlan
- Docker Security
- Docker Content Trust
- Securing the Docker Daemon

Hands-On:

- Create and use a User-defined Bridge Network
- Create and use a Overlay Network
- Use Host and Macvlan Network

- Configure Docker to use External DNS
- Signing images using DCT
- Securing the Docker Daemon

Module 7: Docker EE and Monitoring

Learning Objectives: Install and configure Docker Enterprise Edition and learn how to use the Universal Control Plane and the Docker Trusted Registry in your enterprise cluster.

Topics:

- Docker Enterprise
- Universal Control Plane (UCP)
- UCP Architecture
- Access Control in UCP
- Docker Trusted Registry (DTR)
- Monitoring using Prometheus

Hands-On:

- Set up Docker Enterprise Edition
- Install UCP
- Access Control using UCP
- Installing DTR
- Using DTR for Image Storage
- Monitoring using Prometheus

Module 8: Docker with Kubernetes

Learning Objectives: Learn about container orchestration engine Kubernetes and its various services to help orchestrate Docker containers.

Topics:

- Kubernetes Core Concepts
- Kubernetes Common Commands
- Pods
- Deployments
- Labels, Selectors and Annotations
- Services
- Persistent Volumes and Persistent Volume Claims
- Storage Classes

Hands-On:

- Setup Kubernetes cluster using GKE
- Kubectl Common Commands
- Deploy a Pod
- Use a Deployment for pod management
- Deploy different Services
- Use Persistent Storage in Kubernetes
- Use Storage Classes

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Kubernetes Certification Training Course

Course Curriculum

About the Course

Kubernetes certification training by Edureka is curated by top industry experts and will helps you in clearing the official Certified Kubernetes Administrator (CKA) Exam. This interactive CKA certification training is created to help you learn how to set up your own Kubernetes Cluster, configure networking between pods and secure the cluster against unauthorized access. This Kubernetes training is live, instructor-led, and helps you master key Kubernetes concepts, with hands-on demonstrations which in turn helps you become a certified Kubernetes professional.

Course Outline

Module 1: Kubernetes Core Concepts and Networking

Learning Objective: Learn the basic concepts of Kubernetes and configure your Kubernetes network using calico.

Topics

- Kubernetes Core Concepts
- Kubectl common commands
- Understanding Pods
- Configure network on cluster nodes
- Pod Networking Concepts
- Setting up a cluster - Kubernetes Certificates

Hands-On

- Perform basic kubectl commands
- Deploy pods and use init containers to pre-set an environment
- Configure Kubernetes network using Calico
- Use certificates to authenticate resources

Skills You Will Learn

- Basics of Kubernetes
- Configure Kubernetes network using calico
- Deploy Pods
- Configure network on cluster nodes

Module 2: Kubernetes Services and Scheduling

Learning Objective: Learn to expose your application using different kinds of Services and understand the ins and outs of Pod Scheduling in your cluster**.**

Topics

- Services and Controllers
- Service Networking
- Deploy and configure network Load Balancer
- Primitives necessary for self-healing apps
- Effects of resource limiting on pod scheduling
- Configure Kubernetes Scheduler
- Running multiple Schedulers

Hands-On

- Deploy different kinds of services
- Deploy and configure a network load balancer

- Configure the Kubernetes scheduler
- Run multiple schedulers

Skills You Will Learn

- Deploy different kinds of services
- Deploy and configure network Load Balancer
- Working with Kubernetes Scheduler

Module 3: Kubernetes Controllers

Learning Objective: Learn the use of different Kubernetes controllers and set up traffic routing rules using Ingress.

Topics

- ReplicaSet and ReplicationController
- DaemonSets
- Deployments
- Rolling updates and Rollbacks
- Scaling applications
- Ingress

Hands-On

- Deploy different ReplicationControllers
- Use DaemonSets on nodes
- Manage pod updates using Deployments
- Use HPA for dynamic work-load management
- Use Ingress controller and rules to manage network traffic

Skills You Will Learn

- Working with different Kubernetes controllers
- Set up traffic routing rules using Ingress

- Rolling updates and Rollbacks
- Scaling applications

Module 4: Persistent Storage in Kubernetes

Learning Objective: Learn to use persistent storage methods for stateful applications and hide sensitive information using ConfigMaps and Secrets.

Topics

- PersistentVolume and PersistentVolumeClaim
- Access modes for volumes
- Primitives for PersistentVolumeClaim
- Secrets and ConfigMaps in your pods
- Storage classes
- Headless services
- StatefulSets

Hands-On

- Deploy PersistentVolume and PersistentVolumeClaim
- Use Secrets and ConfigMaps in your applications
- Use StorageClass for dynamic storage allocation
- Use stateful applications for sticky identities for pods
- Deploy a highly available replicated MariaDB cluster

Skills You Will Learn

- Use persistent storage methods for stateful applications
- Hide sensitive information using ConfigMaps and Secrets
- Access modes for volumes

Module 5: Securing the Cluster

Learning Objective: Learn how to secure the cluster using role-based access control (RBAC) and configure custom network policies for your pods.

Topics

- Authentication
- Authorization
- Kubernetes security primitives
- Configure Network Policies
- Security Contexts

Hands-On

- Create and use Roles and RoleBindings
- Define custom Egress and Ingress policies
- Use probes and configure a restart policy for pods
- Define privilege and access control using security contexts

Skills You Will Learn

- Configure role-based access control (RBAC)
- Configure custom network policies for pods
- Authentication and Authorization
- Kubernetes security primitives
- Working with Network Policies

Module 6: Logging and Monitoring the Cluster

Learning Objective: Monitor cluster and visualize cluster logs using Prometheus and EFK stack. Deploy jobs, manage the etcd cluster, and use Helm Charts to deploy applications.

Topics

- Monitoring the cluster using Prometheus

- Visualizing cluster logs using EFK stack
- Jobs
- ETCD operations
- Helm Charts

Hands-On

- Monitor cluster using Prometheus
- Visualize logs using EFK stack
- Deploy jobs to run tasks to completion
- Manage etcd cluster
- Use Helm Charts

Skills You Will Learn

- Cluster maintenance
- Use Helm Charts to deploy applications.
- Visualizing cluster logs using EFK stack
- Deploying Jobs

Module 7: Troubleshooting the Cluster

Learning Objective: Learn how to handle and troubleshoot common cluster failures.

Topics

- Troubleshooting application failures
- Troubleshooting cluster failures

Skills You Will Learn

- Handling and troubleshooting common cluster failures

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AWS Certified DevOps Engineer Training

Course Curriculum

About the Course

The AWS Certified DevOps Engineer – Professional exam validates technical expertise in provisioning, operating and managing distributed application systems on the AWS platform. Edureka's AWS Certified DevOps Engineer training has been designed to help an individual in developing advanced technical skills on CodeCommit, Codepipeline, CloudFormation, OpsWorks, Beanstalk and many more, needed to successfully attempt the AWS Certified DevOps Engineer – Professional examination. With this AWS professional certification under your belt, you will join an elite club of AWS Certified DevOps Engineer Professionals who are in high demand by employers worldwide.

Course Outline

Module 1: Introduction to DevOps on Cloud

Learning Objectives: In this module, you will be introduced to important aspects of DevOps and Amazon Web Services. Also, you will get to know about the necessary security concepts required to manage your account and data on the AWS platform.

Topics:

- Understanding DevOps and its lifecycle
- Why DevOps on Cloud?
- Introduction to AWS
- DevOps using AWS
- Security Management - IAM (Identity and Access Management), WAF (Web Application Firewall), AWS Shield, Guard Duty
- Trusted Advisor

- Governance Strategies

Hands-on:

- Creating Policies for a new user to have all Admin Or Limited Privileges
- Login AWS Management Console via MFA
- Trusted Advisor
- Enabling Governance using AWS Config
- Set Alerts and Budget for your AWS Account

Module 2: SDLC Automation

Learning Objectives: In this module, you will learn how to automate Software Development Lifecycle using various AWS development tools.

Topics:

- CodeCommit
- CodeBuild
- CodePipeline
- CodeDeploy
- AWS CodeStar

Hands-on:

- Working of Code Commit
- Deploy an application using Codepipeline

Module 3: Automating Infrastructure with CloudFormation

Learning Objectives: In this module, you will be introduced to important aspects of CloudFormation. Along with it, you will also learn how to use CloudFormation Templates to model and provision the AWS resources in an automated and secure manner for your application.

Topics:

- Introduction to CloudFormation
- CloudFormation Template
- Intrinsic Functions & Conditions
- Stack Creation

- Advanced CloudFormation Concepts - CloudFormation Nesting, CloudFormation Wait Conditions & Wait Condition Handlers, CloudFormation Helper Scripts, CloudFormation Custom Resources
- CloudFormation Stack Updates
- CloudFormation Resource Deletion Policy
- CloudFormation Best Practices
- Troubleshooting

Hands-on:

- Creating an S3 Bucket using CloudFormation by Hardcoding the Name
- Creating an S3 Bucket using Intrinsic Function (Join And Ref)
- Creating and Configuring EC2 Instance using Helper Scripts
- Creating a Custom Resource with the help of Lambda Function

Module 4: Application Deployment using Elastic Beanstalk

Learning Objectives: In this module, you will learn various aspects of Elastic Beanstalk. Also, you will learn how to deploy and Monitor your application in Beanstalk.

Topics:

- Introduction to Elastic Beanstalk
- Components of Beanstalk
- Deployment Option
- Platform Updates
- Docker in Elastic Beanstalk
- Extending Beanstalk using extensions
- Alarms and Notification
- Troubleshooting

Hands-on:

- Deploy a Web application with DynamoDB using Beanstalk
- Deploy an application in beanstalk using Docker
- Immutable deployment of the application in Beanstalk
- Creating cron-job on beanstalk instances using .ebextensions

Module 5: Configuration Management using OpsWorks

Learning Objectives: In this module, you will get to know the nitty-gritty of AWS OpsWorks and learn how to create stacks and manage configuration with AWS OpsWorks.

Topics:

- Introduction to OpsWorks
- Components of OpsWorks
- Cookbooks, Recipes, Data bags and Berkshelf
- OpsWorks Lifecycle Events
- OpsWorks Deployment
- OpsWorks Auto-Healing
- Troubleshooting

Hands-on:

- Deploy an application in OpsWorks Stack
- Integration of CloudFormation with OpsWorks

Module 6: Automate Monitoring and Event Management in AWS

Learning Objectives: In this module, you will understand how to implement the concepts of continuous monitoring and management using CloudWatch and CloudTrail. You will also learn to set-up event-driven automated actions.

Topics:

- Introduction to CloudWatch
- CloudWatch Metrics: EC2, ELB, and Auto Scaling metrics
- Custom Metrics
- CloudWatch Alarms
- CloudWatch Agent
- CloudWatch Logs
- Introduction to CloudTrail
- System Manager
- Tagging
- Concepts required to set-up event-driven automated actions - Lambda, SNS, Autoscaling

Hands-on:

- Configure Amazon CloudWatch to Notify when CPU Utilization of an Instance is greater than 85%
- Enable CloudTrail and store Logs in S3

Module 7: High Availability, Fault Tolerance and Disaster Recovery

Learning Objectives: In this module, you will learn how to implement highly available and fault-tolerant systems. Also, you will be introduced to Disaster recovery strategies which are effective in making your system resilient at any point of failure.

Topics:

- EBS
- Elastic IP
- Multi region and multi AZs
- SQS
- Data Management in Amazon RDS
- Dynamo DB
- S3
- Provisioning elasticity using Load Balancer and Auto-Scaling
- Components of Auto Scaling
- Horizontal and vertical scaling
- Auto-Scaling Lifecycle
- Recovery Time Objective and Recovery Point Objective
- Disaster Recovery Options
- Overcome single Point of Failure

Hands-on:

- Working of Load Balancer and Auto-Scaling to support highly available and fault tolerant system

Module 8: Container Management Tools

Learning Objective: In this module, you will learn about container management tools like Elastic Container Registry (ECR), Elastic Container Service (ECS) and Fargate**.**

Topics:

- Orchestration

- Elastic Container Service
- Amazon ECR
- Select a Launch type for your application
- ECS with EC2
- ECS with Fargate

Hands On:

- To Push An Image Into ECR
- To host a website inside ECS using Fargate launch type

Module 9: AWS Certified DevOps Engineer Exam Discussion (Self-Paced)

Learning Objectives: This module focuses on exam questionnaires along with guidance on preparing for the AWS Certified DevOps Engineer Exam.

Topics:

- AWS Certified DevOps Engineer Exam Guide
- Certification Exam Questionnaires