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DevOps:

.DevOps is a set of practices that integrates software development (Dev) with information technology operations (Ops) to enable continuous delivery and maintain high standards of software quality. It encompasses a broad range of capabilities, including security, collaborative ways of working, data analytics, and more. DevOps represents the convergence of two closely related trends: agile infrastructure and agile operations.

By influencing the entire application lifecycle—including the planning, development, delivery, and operational phases—DevOps ensures that each stage is interconnected and mutually dependent. These phases are not tied to specific roles; instead, they emphasize shared responsibility, collaboration, and continuous improvement across teams.

Phases of DevOps:

- Plan
- Develop
- Deliver
- Operate

While adopting DevOps practices automates and optimized processes trough technology. Cloud adoption has fundamentally transformed the way teams are building, deploying, and operating applications. Alongside the adoption of DevOps, teams now have greater opportunity to enhance their practices and better serve their customers better.

Benefits of DevOps:

- Significantly shorter time to market
- Improved customer satisfaction

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- Better product quality
- Improved Productivity and efficiency

Course Content:

Module 1 – DevOps Introduction

Objectives – At the end of this Module, you should be able to:

- What is DevOps
- What is SDLC
- Why DevOps
- DevOps principles
- Waterfall vs Agile vs DevOps
- DevOps tools

Module 2 - Cloud Computing Concepts

Objectives – At the end of this Module, you should be able to:

- Cloud History
- Cloud Computing Concepts
- Cloud Deployment Models

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- Cloud Delivery Models
- Cloud Computing Benefits

Module 3 – AWS/ Azure Overview

Objectives – At the end of this Module, you should be able to:

- AWS/Azure History
- Brief Overview of AWS/Azure
- AWS /Azure as a Market Leader
- AWS /Azure Globally Distributed Infrastructure
- Discuss AWS/ Azure Products and Services

Module 4 - Virtualization

Objectives – At the end of this Module, you should be able to:

- What is Virtualization?
- History of Virtualization
- What is Hypervisor?
- Types of Server Virtualization
- Benefits of Virtualization

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- Important Virtualization products

Module 5 - VAGRANT

Objectives – At the end of this Module, you should be able to:

Introduction

1. Why and what is Vagrant
2. Uses of Vagrant in an environment
3. Alternatives of Vagrant
4. Vagrant versions

Installation and Configuration:

1. Installing Virtual box
2. How to install Vagrant on Windows
3. Configuring Vagrant

Provisioning with Vagrant:

1. Creating first VM with Vagrant
2. Operations on the VM

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3. Connecting to the VM
4. Add required Images to Vagrant
5. Using Vagrant.

Module 6 - GIT: Version Control System

Objectives – At the end of this Module, you should be able to:

Introduction:

1. Version control systems
2. Local, Centralized and distributed

Installing Git:

1. Installing on Linux
2. Installing on Windows
3. Initial setup

Git Essentials:

1. Creating repository
2. Cloning, check-in and committing
3. Fetch pull and remote

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4. Branching

Module 7 - Configuration Management: Chef

Objectives – At the end of this Module, you should be able to:

Overview of Chef:

1. Common Chef Terminology (Server, Workstation, Client, Repository etc.)
2. Servers and Nodes
3. Chef Configuration Concepts

Workstation Setup:

1. How to configure knife
2. Execute some commands to test the connection between knife and workstation

Organization Setup:

1. Create Organization
2. Add yourself and node to the organization

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Test Node Setup:

1. Create a server and add to organization
2. Check node details using knife

Node Objects and Search:

1. How to Add Run list to Node
2. Check node Details

Environments:

1. How to create Environments
2. Add servers to environments

Roles:

1. Create roles
2. Add Roles to organization

Module 8 - Configuration Management: Puppet

Objectives – At the end of this Module, you should be able to:

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What is Puppet?

1. How puppet works
2. Puppet Architecture
3. Master and Agents
4. Configuration Language
5. Resource Abstraction Layer
6. Transactional Layer

Installation and Configuration:

1. Installing Puppet
2. Configuring Puppet Master and Agent
3. Connecting Agents

Puppet Master:

1. Puppet configuration tree
2. Puppet configuration files

Puppet Language Basics:

1. The declarative language

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2. Resources
3. Resource Collectors
4. Virtual Resources
5. Exported Resources
6. Manifests
7. Relationships and Ordering
8. Modules and Classes
9. Class Parameters
10. Defined Types

Puppet Language Advanced & nbs

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- Process of applying jobs at the right places

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