

دوره Cloud-Base DevOps Engineering (AWS-Azure- (GCP

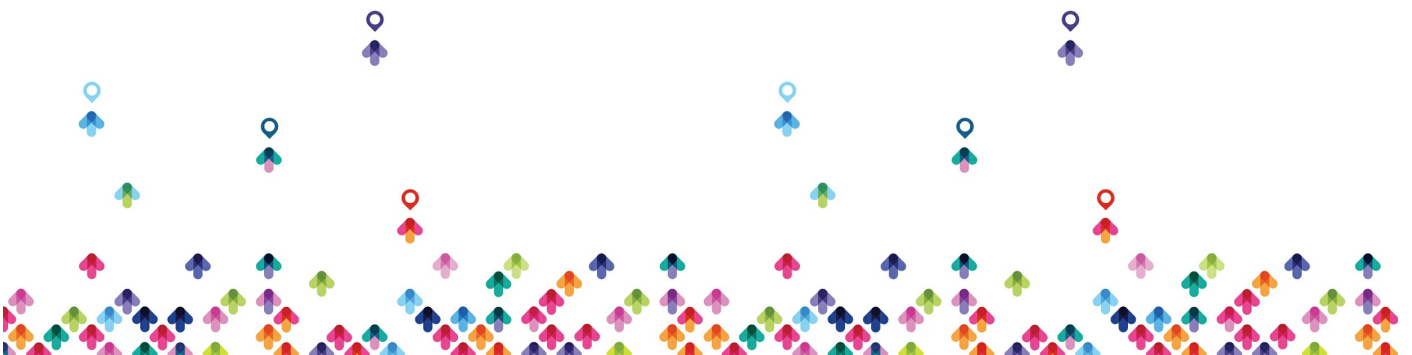
سرفصل ها

۱. Introduction to Cloud-Based DevOps (۱۰ hours)

- Understanding DevOps Principles in the Cloud
 - o Culture, Collaboration, and Automation in Cloud Environments
 - o Key Benefits of Cloud-Based DevOps: Scalability, Flexibility, and Cost-Efficiency
- Overview of Cloud Infrastructure (AWS, Azure, GCP)
 - o Key Concepts: Regions, Availability Zones, Virtual Networks, Security Groups
 - o Introduction to IaaS, PaaS, and SaaS Models
- Lab Session: Setting Up Basic Cloud Infrastructure on AWS, Azure, and GCP
 - o Creating Virtual Machines and Configuring Virtual Networks
 - o Introduction to AWS Management Console, Azure Portal, and Google Cloud Console

۲. Linux Essentials for Cloud DevOps (۱۰ hours)

- Introduction to Linux Operating System
 - o Linux Distributions: Amazon Linux, Ubuntu, CentOS
 - o File System Hierarchy and Basic Commands (ls, cd, pwd, etc.)
- Basic Linux Commands and Shell Scripting
 - o File Operations: cp, mv, rm, cat, nano, vim
 - o Process Management: ps, top, kill



- o User and Group Management: useradd, groupadd, chmod, chown
- Lab Session: Hands-on with Linux Commands in Cloud Environments
 - o Working with AWS EC₂ Instances, Azure Virtual Machines, and GCP Compute Engine
 - o Writing Basic Shell Scripts for Automation

۳. **Version Control Systems and Git Integration** (۱۰ hours)

- Introduction to Version Control Systems (VCS)
 - o Git Basics: Branching, Merging, and Collaboration
 - o Importance of Version Control in DevOps
- Deep Dive into Git and GitHub/GitLab Integration
 - o Overview of GitHub, GitLab as DevOps Platforms
 - o Setting Up Repositories, Managing Access, Using Pull Requests
- Lab Session: Working with Git in Cloud Environments
 - o Using Git for Version Control on AWS CodeCommit, Azure Repos, and Google Cloud Source Repositories
 - o Setting Up CI/CD Pipelines with GitHub Actions

۴. **AWS DevOps Tools and Services** (۱۰ hours)

- Overview of AWS DevOps Services
 - o AWS CodePipeline, CodeBuild, CodeDeploy, and CodeCommit
 - o AWS CloudFormation and AWS Elastic Beanstalk
- Hands-On with AWS DevOps Tools
 - o Building CI/CD Pipelines with AWS CodePipeline
 - o Deploying Applications with AWS CodeDeploy and Elastic Beanstalk
- Lab Session: Implementing AWS DevOps Solutions
 - o Creating a CI/CD Pipeline Using AWS DevOps Services
 - o Automating Infrastructure Deployment with AWS CloudFormation



۵. **Azure DevOps Tools and Services** (۱۰ hours)

- Overview of Azure DevOps Services
 - o Azure Pipelines, Azure Repos, Azure Artifacts, Azure Boards
 - o Azure Resource Manager (ARM) Templates and Azure Functions
- Hands-On with Azure DevOps Tools
 - o Building CI/CD Pipelines with Azure Pipelines
 - o Deploying Applications with Azure Functions and Azure Kubernetes

Service (AKS)

- Lab Session: Implementing Azure DevOps Solutions
 - o Creating a CI/CD Pipeline Using Azure DevOps
 - o Automating Infrastructure Deployment with Azure Resource Manager

Templates

۶. **Google Cloud DevOps Tools and Services** (۱۰ hours)

- Overview of GCP DevOps Services
 - o Google Cloud Build, Google Cloud Deployment Manager, Google Kubernetes Engine (GKE)
 - o Google Cloud Source Repositories, Artifact Registry
- Hands-On with GCP DevOps Tools
 - o Building CI/CD Pipelines with Google Cloud Build
 - o Deploying Applications with Google Kubernetes Engine (GKE) and Google

App Engine

- Lab Session: Implementing GCP DevOps Solutions
 - o Creating a CI/CD Pipeline Using GCP DevOps Tools
 - o Automating Infrastructure Deployment with Google Cloud Deployment

Manager

۷. **Infrastructure as Code (IaC) on AWS, Azure, and GCP** (۱۰ hours)



- Introduction to Infrastructure as Code (IaC)
 - Benefits and Tools (AWS CloudFormation, Azure Resource Manager, Google Cloud Deployment Manager, Terraform)
 - Best Practices for IaC in Multi-Cloud Environments
- Hands-On with Terraform for Multi-Cloud Deployments
 - Writing and Managing Terraform Scripts for AWS, Azure, and GCP
- Lab Session: Implementing IaC with Terraform
 - Automating Infrastructure Setup on AWS, Azure, and GCP Using Terraform
- ۸. **Containerization and Orchestration with AWS, Azure, and GCP (۱۰ hours)**
 - Introduction to Docker and Kubernetes
 - Benefits of Containerization in Cloud Environments
 - Deep Dive: Container Services on AWS, Azure, and GCP
 - AWS Elastic Kubernetes Service (EKS), Azure Kubernetes Service (AKS), Google Kubernetes Engine (GKE)
 - Lab Session: Deploying Containerized Applications
 - Setting Up and Managing Kubernetes Clusters on AWS EKS, Azure AKS, and GCP GKE
 - Deploying and Managing Docker Containers
- ۹. **Continuous Integration and Continuous Deployment (CI/CD) in the Cloud (۱۰ hours)**
 - Overview of CI/CD Pipelines
 - CI/CD Strategies for Cloud Environments
 - Tools and Techniques for Automated Testing and Deployment
 - Implementing CI/CD with AWS, Azure, and GCP
 - Using AWS CodePipeline, Azure Pipelines, and Google Cloud Build for



CI/CD

- o Integrating with Third-Party Tools like Jenkins and GitLab
- Lab Session: Creating End-to-End CI/CD Pipelines
 - o Building and Deploying Applications with AWS, Azure, and GCP Pipelines

۱۰. **Monitoring, Logging, and Observability in Cloud** (۱۰ hours)

- Introduction to Monitoring and Logging
 - o Importance of Observability in Cloud-Based DevOps
 - o Overview of Tools: AWS CloudWatch, Azure Monitor, Google Cloud Operations Suite (Stackdriver), ELK Stack

- Deep Dive: Setting Up Monitoring and Alerts

- o Configuring AWS CloudWatch, Azure Monitor, and Google Cloud

Operations Suite for Application and Infrastructure Monitoring

- Lab Session: Implementing Monitoring Solutions

- o Setting Up Dashboards and Alerts on AWS CloudWatch, Azure Monitor, and Google Cloud Operations Suite

۱۱. **Security and Compliance in Cloud DevOps** (۱۰ hours)

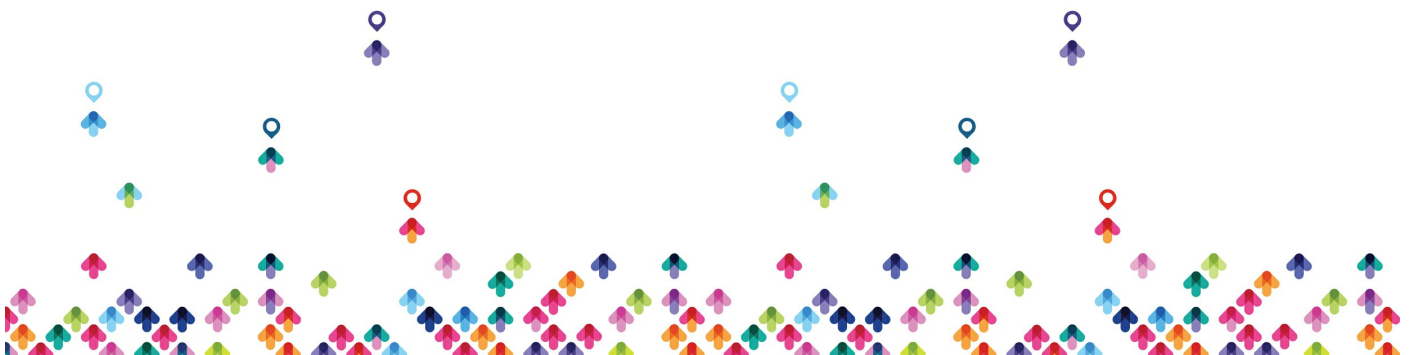
- Introduction to Cloud Security Principles
 - o Shared Responsibility Model in AWS, Azure, and GCP
 - o Cloud Security Best Practices and Compliance (e.g., IAM, VPC Security, Data Encryption)

- Hands-On Security Tools

- o Using AWS IAM, AWS WAF, Azure Active Directory, Azure Security Center, Google Cloud IAM, and Google Cloud Security Command Center

- Lab Session: Implementing Security Best Practices

- o Configuring Security Groups, IAM Roles, and Access Controls in AWS, Azure, and GCP

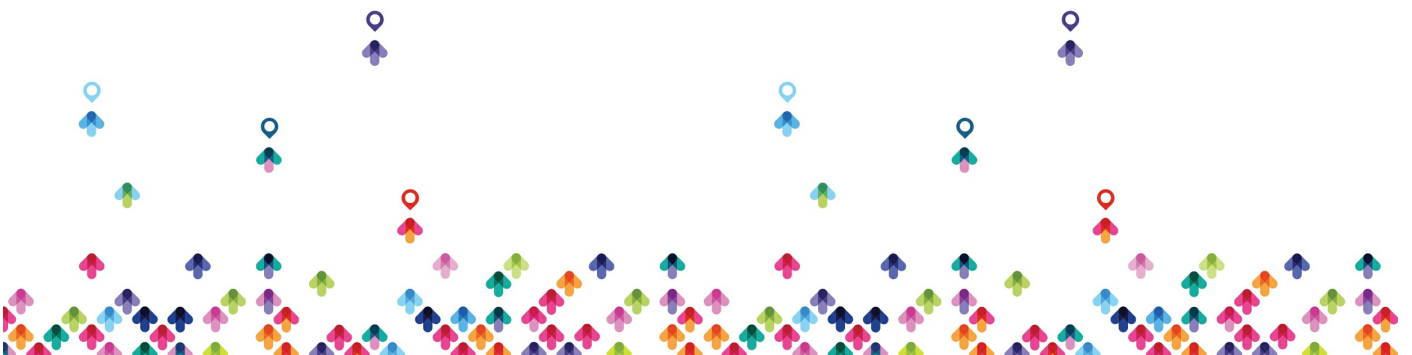


۱۲. **Advanced Automation and Scripting for Cloud DevOps** (۱۰ hours)

- Advanced Scripting Techniques for Cloud Automation
 - Bash, Python, and PowerShell for AWS, Azure, and GCP Automation
 - Use Cases and Best Practices
- Lab Session: Writing Advanced Scripts
 - Automating Cloud Operations (e.g., Scaling, Backup, Maintenance) with AWS CLI, Azure CLI, and Google Cloud SDK

۱۳. **Multiple CI/CD Projects with AWS, Azure, GCP, and Jenkins** (۱۰ hours)

- Project ۱: CI/CD Pipeline with AWS DevOps Services
 - Design and Implement a Complete CI/CD Pipeline Using AWS CodePipeline, CodeBuild, and CodeDeploy
 - Automate the Build, Test, and Deployment Processes in AWS
- Project ۲: CI/CD Pipeline with Azure DevOps Services
 - Set Up Azure Pipelines for Continuous Integration and Deployment
 - Deploy Applications to Azure Kubernetes Service (AKS) and Azure App Services
- Project ۳: CI/CD Pipeline with Google Cloud DevOps Services
 - Create a Pipeline Using Google Cloud Build for CI/CD
 - Deploy Applications to Google Kubernetes Engine (GKE) and Google App Engine
- Project ۴: Hybrid CI/CD Pipeline Using Jenkins, AWS, Azure, and GCP
 - Design a Multi-Cloud CI/CD Pipeline Using Jenkins for CI, AWS CodeDeploy, Azure Pipelines, and Google Cloud Build for Deployment
 - Implement Advanced Deployment Strategies (Blue-Green, Canary Releases)
 - Monitor and Log Deployments Using AWS CloudWatch, Azure Monitor,



Google Cloud

Operations Suite, and ELK Stack

- Lab Session: Implementing and Managing Multiple CI/CD Projects
 - o Setting Up and Configuring Environments for Each Project
 - o Deploying Applications Across Different Cloud Platforms

۱۴. **Case Studies, Best Practices, and Final Project** (۱۰ hours)

- Case Studies on Successful Cloud DevOps Implementations
 - o Real-World Examples, Best Practices, and Lessons Learned
- Final Project Presentation and Evaluation
 - o Develop and Demonstrate a Comprehensive DevOps Pipeline

مخاطبان دوره

کارشناسان شبکه

متخصصین برنامه نویسی

پیش نیازها

دوره نتورک پلاس

