# Developing Cloud-Native Applications with Microservices Architectures

**Course Duration: 8 Hours** **Course code DO092**

## 1. Course Overview

The Developing Cloud-Native Applications with Microservices Architectures course equips developers with the skills to design, build, and deploy applications using a microservices approach. It focuses on cloud-native development principles, containerization, and orchestration to create scalable and resilient applications. Participants will explore modern development tools and frameworks to implement agile, flexible, and efficient microservices solutions.

## 2. What you'll learn?

This course is designed to help participants gain practical skills and knowledge to build, deploy, and manage cloud-native applications using microservices architecture principles. Learners will explore the fundamentals of microservices design, containerization, orchestration, and cloud-native patterns. The course emphasizes scalability, resilience, and maintainability while leveraging cloud platforms for faster and more flexible software delivery.

## 3. Target Audience

- Software developers and engineers
- Solution architects and technical architects



**Phone:** +91-999-911-1686 **Mail Us:** info@ssdntech.com

- DevOps engineers and site reliability engineers (SREs)
- Cloud engineers and cloud-native application developers
- Technical leads and team leads involved in modern application delivery
- Anyone seeking to modernize legacy applications using microservices

## 4. Pre-Requisites

**Participants should have:**

Before enrolling, participants should have a solid foundation in programming and a basic understanding of software architecture concepts. Familiarity with cloud platforms and container technologies will be beneficial to maximize learning outcomes and connect course topics to real-world application.

- Proficiency in at least one programming language (e.g., Java, Python, Node.js)
- Understanding of basic software architecture principles
- Familiarity with cloud platforms (such as AWS, Azure, or GCP)
- Prior exposure to containerization tools (like Docker) is helpful but not mandatory

## 5. Course content

**Module 1: Introduction to Cloud-Native and Microservices**

- Understanding cloud-native principles
- Monolithic vs. microservices architectures
- Advantages of microservices in the cloud

**Module 2: Designing Microservices**

- Domain-driven design (DDD) fundamentals
- Service decomposition strategies
- Designing APIs for microservices

**Module 3: Containers and Orchestration**

- Containerizing microservices with Docker
- Kubernetes fundamentals for microservices
- Using Red Hat OpenShift for deployment

**Module 4: Communication and Data Management**

- REST and event-driven communication
- Managing distributed data
- Database per service pattern

**Module 5: Security and Resilience**

- Securing microservices
- Service mesh introduction (Istio/Red Hat Service Mesh)
- Fault tolerance and scalability

## Module 6: CI/CD for Microservices

- Automating builds, tests, and deployments
- Using OpenShift Pipelines for continuous delivery
- Monitoring and logging in microservices environments



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