Microservices Architect

Microservice Training Course

Microservices are a modern approach to developing distributed software applications, where each service is independent, deployable separately, and communicates with other services through APIs or containers. This course offers in-depth and up-to-date knowledge on designing, developing, securing, and deploying microservices using leading technologies and tools in 2025

You Must Know!

Duration:
40 Hours

Who should attend?
Software developers, architects, and DevOps engineers looking to deepen their knowledge in microservices.
Experienced software developers interested in learning how to design and deploy microservices-based systems.

Prerequisites:

- Experience in software development (preferably in Java, Python, Node.js, or Go).
- Basic understanding of APIs and communication protocols (HTTP, REST).

Familiarity with Docker and Kubernetes – an advantage.

Course Objectives:

- Understand the principles of microservices architecture.
- Learn to design, develop, and deploy modern microservices.
- Explore advanced technologies like Service Mesh, Serverless, and Event-Driven Architectures.
- Learn how to secure microservices using OAuth 2.1 and Zero Trust.
- Dive into monitoring, testing, and optimizing microservices.

Microservices Architect

Course Content:

Module 1 – Evolution and Architecture of Microservices

- Transition from monolithic to distributed architecture.
- Service-Oriented Architecture (SOA) vs. Microservices.
- Introduction to API Ecosystem.
- REST and GRPC principles.
- Event-Driven Architecture and Async Messaging.

Module 2 – Designing Microservices

- Domain-Driven Design (DDD).
- Bounded Contexts and Saga Patterns.
- Designing APIs with OpenAPI and GraphQL.
- Common microservices design patterns.
- Decoupling Frontend from Backend.

Module 3 – Deploying and Managing Microservices

- Deployment with Docker and Kubernetes (v1.30).
- Service Mesh (Istio/Linkerd) for service communication.
- Configuration management with Helm.
- Deployment automation using ArgoCD/GitOps.
- Multi-Cloud & Hybrid Cloud Deployments.

Module 4 – Securing Microservices

- Zero Trust principles.
- OAuth 2.1 and OpenID Connect.
- API Gateways (Kong/Apigee) for API management and security.
- Securing communication with Mutual TLS (mTLS).
- Penetration testing and securing services.

Module 5 – Monitoring, Logging, and Observability

- Using Grafana, Prometheus, and OpenTelemetry.
- Distributed Tracing with Jaeger/Zipkin.
- Log analysis with ELK Stack (Elasticsearch, Logstash, Kibana).
- Performance management and alerting.
- APM – Application Performance Monitoring.

Module 6 – Testing Microservices

- Unit, Integration, and Contract Testing.
- Using Pact for Contract Testing.
- Load testing with k6.
- Chaos Engineering – resilience testing with Chaos Monkey.
- Best practices for automated testing.

Module 7 – Advanced Microservices and AI Integration

- Serverless Microservices (AWS Lambda, Azure Functions).
- Event Streaming with Kafka/RabbitMQ.
- Integrating AI/ML into microservices.
- Building GPT and LLM-based APIs.
- Edge Computing with microservices.

Module 8 – Summary and Deep Dive

- Recap of key principles and insights from the course.
- Discussion on advanced case studies.
- Tips and tricks for architects.
- Q&A session.

Teaching Methods:

- Lectures.
- Hands-on exercises.
- Case study analysis.

Certification:
Upon successful completion of the course, participants will receive a certified diploma in "Microservices Architecture – 2025 Edition".

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