

# Microservices, ASP.NET Core, and Docker

Learn to design, containerise and orchestrate microservices using ASP.NET Core, Docker and Kubernetes.

**10**

MODULES

**63**

TOPICS

## COURSE OVERVIEW

This course examines the case for microservices, comparing them with SOA and monolithic architectures before introducing Docker for building, running and managing images and containers. It covers volumes, container orchestration with Docker Compose, and building ASP.NET Core applications with REST APIs and Entity Framework Core. It then addresses containerising ASP.NET Core applications, converting a monolithic feature into a microservice, and handling inter-service communication, fault handling and health checks. Finally, it looks at orchestration and monitoring tools including Docker Swarm, Kubernetes, Marathon, cAdvisor and SysDig, along with core Kubernetes concepts such as nodes, pods, services and deployments.

## WHO THIS COURSE IS FOR

ASP.NET Developers

.NET Architects

DevOps Engineers

Backend Developers

Cloud Infrastructure Engineers

## LEARNING OBJECTIVES

- Explain differences between microservices, SOA and monoliths
- Describe Docker images, containers and the layered file system
- Build and manage custom Docker images using a Dockerfile
- Configure volumes for persisting and sharing container data
- Orchestrate multi-container applications using Docker Compose
- Develop ASP.NET Core applications with Web API and Entity Framework Core
- Implement communication and fault handling between microservices
- Deploy and monitor microservices using Kubernetes and related tools

# 10 Modules, 63 Topics

01

## The Case for Microservices

### TOPICS

Overview of Microservices · Microservices vs. SOA · Pros and Cons of Microservices · Client-side vs. Server-side Routing · Planning for Microservices · Microservices Reference Application

02

## Getting Started with Docker

### TOPICS

- Application Deployment
- Shipping with Containers
- Getting Started with Docker
- Benefits to Developers and DevOps
- Overview of Images and Containers
- Layered File System
- Containers vs Virtual Machines
- Docker and Microservices

03

## Docker Images and Containers

### TOPICS

Container Registries · Working with Images · Working with Containers · Getting Started with a Custom Dockerfile · Building an Image · Updating an Image · Pushing an Image to a Registry

04

## Containers and Volumes

### TOPICS

Components Overview · Source Code and Containers · Introduction to Volumes · Creating a Volume · Inspecting Volumes · Defining a volume in a Dockerfile · Local Source Code and Containers

05

## Orchestrating Containers with Docker Compose

### TOPICS

Container Orchestration · Getting Started with Docker Compose · The docker-compose.yml File · Docker Compose Commands

06

## Getting Started with ASP.NET Core

### TOPICS

Configuration and Middleware Pipeline · Controllers and Views · RESTful Services with Web API · Data Access with Entity Framework Core · OS X Cross Platform Development

**07**

## ASP.NET Core and Docker

### TOPICS

ASP.NET Core Docker Images · Creating ASP.NET Core Linux Images · Creating ASP.NET Core Windows Images · Visual Studio Docker Features · “Containerizing” .NET Framework Applications · Running and Debugging Containers

**08**

## Monolithic to Microservices

### TOPICS

- Monolithic Applications Review
- Microservices Review
- Communicating with Microservices
- Converting a Monolithic Feature to a Microservice
- Creating Dockerfiles and Images
- Communication with Microservices
- Fault Handling
- Health Checks

**09**

## Microservices Orchestration and Monitoring

### TOPICS

Tools Overview · Docker Swarm · Kubernetes · Marathon · cAdvisor · SysDig

**10**

## Introduction to Kubernetes

### TOPICS

Why Kubernetes · Kubernetes Overview · The Master · Nodes and Pods · Services and Deployments · Files and Commands

#### WHAT IS INCLUDED

## Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

#### ABOUT KOENIG

## Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

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