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Containers and Azure Service Fabric

(5 days)

Course overview

This course takes a detailed look at how to plan, implement, and operate scalable and reliable microservices to Azure Service Fabric. We take a detailed look at the development issues in Web API to create stateful and stateless microservices, and see how to use the actor model to achieve concurrency and re-entrancy. We also cover important practical issues such as orchestration, containerisation, reliability, up-time and instrumentation for DevOps.

What you'll learn

- Creating containerized applications
- Creating microservices using Web API
- Understanding Azure Service Fabric
- Creating MSA applications on Azure Service Fabric
- Working with Actors

Prerequisites

- Solid C# programming experience
- Awareness of cloud computing beneficial, but not essential

Course details

- **Introduction to Containerisation:** Containers vs. VMs; Docker essential concepts; Installing Docker on Windows and/or Linux
- **Docker Images and Containers:** Understanding Docker images; Dockerfiles; Creating Docker images; Running Docker containers; Repositories; Working with Docker Hub
- **Digging Deeper into Docker:** Docker Compose; Docker Swarm; Docker security; DevOps considerations
- **Getting Started with Microservices:** Monolithic vs. microservices; Microservice developer principles; Microservice DevOps principles; Microservice Architecture
- **Creating On-Premise Microservices:** REST essentials, Creating REST applications using ASP.NET Core Web API; Web API technical details; Interactions between REST services
- **Going Further with Web API:** OWIN pipeline; Middleware; Services; CORS; Security issues
- **Getting Started with Azure Service Fabric:** Essentials of cloud computing; Azure characteristics; Getting started with Azure Service Fabric; Using Azure Service Fabric CLI
- **Azure Service Development:** Stateless services; Stateful services; Reliable services; Service communication; Common design patterns and idioms

- **Actors:** Overview of actors; The Virtual Actor platform; Service Fabric Reliable Actors; Understanding the Reliable Actors API; Concurrency and re-entrancy
- **A Closer at Look State:** Options for managing state in Azure; Azure SQL Database; Azure Table Storage; Azure Queue Storage
- **Practical Issues:** Testing; CI/CD; Monitoring and diagnostics; Operational management