

Create cloud native apps with Azure and open-source software

Duration: 1 day (8 hrs)

Cloud-native apps represent a modern approach to app development, where software systems are designed with cloud scale and capabilities in mind. Cloud-native apps build on open source technologies where feasible, with a focus on architectural modularity. In focusing on open technologies, "Cloud Native", means flexibility of deployment target, while still being able to use Azure-specific services like Azure Cosmos DB and Microsoft Entra ID.

This hands-on training covers the essentials of selecting components for cloud-native apps, building the integrations, and deploying to Azure.

You'll create multiple services, processing both large scale of messages from devices and streaming data from IoT devices.

Prerequisites

Familiarity with Azure Cloud Computing including Containerization, IoT etc

Course Overview

Module 1: Introduction to cloud-native apps on Azure

This module teaches concepts and ideas associated with cloud-native apps. We cover selecting Open-Source Software (OSS) components like Kubernetes and PostgreSQL, as well as unique Azure tools like Cosmos DB. We'll also identify situations that call for building cloud-native apps, and review selecting components in an example scenario.

- Introduction
- What are cloud-native apps?
- Using containers with cloud-native apps
- Designing a cloud-native app
- When to use cloud-native apps

Module 1: Orchestrate containers for cloud-native apps with AKS

Cloud-native applications are modular in nature, with components separated and self-contained. Components can be encapsulated in containers, such as those created with Docker, or published from an Azure service. Dynamic scaling can then be managed by Kubernetes. We'll learn to decide when Kubernetes is right for our cloud-native app, and we'll see how to use it as a first building block of our cloud-native architecture.

- Introduction
- Running containers with Kubernetes
- Exercise - Create an AKS cluster
- Developing with containers and AKS
- Exercise - Set up a development environment with AKS
- Connecting cloud-native components
- Exercise - Connect cloud-native components

Module 1: Stream internet-of-things (IoT) data to a cloud-native app with IoT Central

Describes how Azure IoT Central facilitates the design, testing, and implementation of distributed applications that process IoT telemetry data generated by smart devices. When designing cloud-native applications, you can leverage Azure IoT Central to deliver a comprehensive set of features that help with design, testing, and implementation of distributed applications that rely on IoT telemetry.

- Introduction
- Describe Azure IoT Central
- Exercise - Set up Azure IoT Central
- Describe how to process IoT telemetry
- Exercise - Implement processing of IoT telemetry

Module 1: Build an IoT service for your cloud-native apps by using IoT Central

Extend your cloud-native application to provide IoT functionality by integrating its components with Azure IoT services and by using Cosmos DB to provide a persistent data store.

- Introduction
- Define IoT service architecture
- Describe Azure Cosmos DB
- Exercise - Set up Azure Cosmos DB
- Integrate data stores with IoT pipelines
- Exercise - Integrate Azure Cosmos DB with the IoT data pipeline
- Analyze telemetry data
- Exercise - Integrate Next.js web app with the IoT data pipeline