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**Hands-On Microservices with C# 8 and .NET Core 3** - Gaurav Aroraa

2020-03-27

Learn the essential concepts, techniques, and design patterns that will help you build scalable and maintainable distributed systems Key Features

Learn to design, implement, test, and deploy your microservices

Understand the challenges and complexities of testing and monitoring

distributed services Build modular and robust microservice architectures

with the latest features of C# 8 and .NET Core 3.1 Book Description The

microservice architectural style promotes the development of complex

applications as a suite of small services based on specific business

capabilities. With this book, you'll take a hands-on approach to build

microservices and deploy them using ASP .NET Core and Microsoft

Azure. You'll start by understanding the concept of microservices and their fundamental characteristics. This microservices book will then introduce a real-world app built as a monolith, currently struggling under increased demand and complexity, and guide you in its transition to microservices using the latest features of C# 8 and .NET Core 3. You'll identify service boundaries, split the application into multiple microservices, and define service contracts. You'll also explore how to configure, deploy, and monitor microservices using Docker and Kubernetes, and implement autoscaling in a microservices architecture for enhanced productivity. Once you've got to grips with reactive microservices, you'll discover how keeping your code base simple enables you to focus on what's important rather than on messy asynchronous calls. Finally, you'll delve into various design patterns and best practices for creating enterprise-ready microservice applications. By the end of this book, you'll be able to deconstruct a monolith successfully to create well-defined microservices. What you will learn Package, deploy, and manage microservices and containers with Azure Service Fabric Use REST APIs to integrate services using a synchronous approach Protect public APIs using Azure Active Directory and OAuth 2.0 Understand the operation and scaling of microservices using Docker and Kubernetes Implement reactive microservices with Reactive Extensions Discover design patterns and best practices for building enterprise-ready

apps Who this book is for This book is for C# and .NET Core developers who want to understand microservices architecture and implement it in their .NET Core applications. If you're new to building microservices or have theoretical knowledge of the architectural approach, this book will help you gain a practical perspective to manage application complexity efficiently.

**Hands-On Kubernetes on Windows** - Piotr Tylenda 2020-03-31

Build and deploy scalable cloud applications using Windows containers and Kubernetes Key FeaturesRun, deploy, and orchestrate containers on the Windows platform with this Kubernetes bookUse Microsoft SQL Server 2019 as a data store to deploy Kubernetes applications written in .NET FrameworkSet up a Kubernetes development environment and deploy clusters with Windows Server 2019 nodesBook Description With the adoption of Windows containers in Kubernetes, you can now fully leverage the flexibility and robustness of the Kubernetes container orchestration system in the Windows ecosystem. This support will enable you to create new Windows applications and migrate existing ones to the cloud-native stack with the same ease as for Linux-oriented cloud applications. This practical guide takes you through the key concepts involved in packaging Windows-distributed applications into containers and orchestrating these using Kubernetes. You'll also understand the current limitations of

Windows support in Kubernetes. As you advance, you'll gain hands-on experience deploying a fully functional hybrid Linux/Windows Kubernetes cluster for development, and explore production scenarios in on-premises and cloud environments, such as Microsoft Azure Kubernetes Service. By the end of this book, you'll be well-versed with containerization, microservices architecture, and the critical considerations for running Kubernetes in production environments successfully. What you will learn

Understand containerization as a packaging format for applications

Create a development environment for Kubernetes on Windows

Grasp the key architectural concepts in Kubernetes

Discover the current limitations of Kubernetes on the Windows platform

Provision and interact with a Kubernetes cluster from a Windows machine

Create hybrid Windows Kubernetes clusters in on-premises and cloud environments

Who this book is for

This book is for software developers, system administrators, DevOps engineers, and architects working with Kubernetes on Windows, Windows Server 2019, and Windows containers. Knowledge of Kubernetes as well as the Linux environment will help you get the most out of this book.

### **Cloud-Native Applications in Java - Ajay Mahajan 2018-02-26**

Highly available microservice-based web apps for Cloud with Java Key Features

Take advantage of the simplicity of Spring to build a full-fledged

application

Let your applications run faster while generating smaller cloud service bills

Integrate your application with various tools such as Docker and Elasticsearch and use specific tools in Azure and AWS

Book Description

Businesses today are evolving so rapidly that they are resorting to the elasticity of the cloud to provide a platform to build and deploy their highly scalable applications. This means developers now are faced with the challenge of building applications that are native to the cloud. For this, they need to be aware of the environment, tools, and resources they're coding against. If you're a Java developer who wants to build secure, resilient, robust, and scalable applications that are targeted for cloud-based deployment, this is the book for you. It will be your one stop guide to building cloud-native applications in Java Spring that are hosted in On-prem or cloud providers - AWS and Azure

The book begins by explaining the driving factors for cloud adoption and shows you how cloud deployment is different from regular application deployment on a standard data centre. You will learn about design patterns specific to applications running in the cloud and find out how you can build a microservice in Java Spring using REST APIs

You will then take a deep dive into the lifecycle of building, testing, and deploying applications with maximum automation to reduce the deployment cycle time. Gradually, you will move on to configuring the AWS and Azure platforms and working with

their APIs to deploy your application. Finally, you'll take a look at API design concerns and their best practices. You'll also learn how to migrate an existing monolithic application into distributed cloud native applications. By the end, you will understand how to build and monitor a scalable, resilient, and robust cloud native application that is always available and fault tolerant. What you will learn

- See the benefits of the cloud environment when it comes to variability, provisioning, and tooling support
- Understand the architecture patterns and considerations when developing on the cloud
- Find out how to perform cloud-native techniques/patterns for request routing, RESTful service creation, Event Sourcing, and more
- Create Docker containers for microservices and set up continuous integration using Jenkins
- Monitor and troubleshoot an application deployed in the cloud environment
- Explore tools such as Docker and Kubernetes for containerization and the ELK stack for log aggregation and visualization
- Use AWS and Azure specific tools to design, develop, deploy, and manage applications
- Migrate from monolithic architectures to a cloud native deployment

Who this book is for

Java developers who want to build secure, resilient, robust and scalable applications that are targeted for cloud based deployment, will find this book helpful. Some knowledge of Java, Spring, web programming and public cloud providers (AWS, Azure) should be sufficient to get you through the book.

## Robust Cloud Integration with Azure - Mahindra Morar 2017-03-22

Unleash the power of serverless integration with Azure

About This Book

Build and support highly available and scalable API Apps by learning powerful Azure-based cloud integration

Deploy and deliver applications that integrate seamlessly in the cloud and quickly adapt as per your integration needs

Deploy hybrid applications that work and integrate on the cloud (using Logic Apps and BizTalk Server)

Who This Book Is For

This book is for Microsoft Enterprise developers, DevOps, and IT professionals who would like to use Azure App Service and Microsoft Cloud Integration technologies to create cloud-based web and mobile apps.

What You Will Learn

- Explore new models of robust cloud integration in Microsoft Azure
- Create your own connector and learn how to publish and manage it
- Build reliable, scalable, and secure business workflows using Azure Logic Apps
- Simplify SaaS connectivity with Azure using Logic Apps
- Connect your on-premises system to Azure securely
- Get to know more about Logic Apps and how to connect to on-premises "line-of-business" applications using Microsoft BizTalk Server

In Detail

Microsoft is focusing heavily on Enterprise connectivity so that developers can build scalable web and mobile apps and services in the cloud. In short, Enterprise connectivity from anywhere and to any device. These integration services are being offered through powerful Azure-based services. This book will teach you

how to design and implement cloud integration using Microsoft Azure. It starts by showing you how to build, deploy, and secure the API app. Next, it introduces you to Logic Apps and helps you quickly start building your integration applications. We'll then go through the different connectors available for Logic Apps to build your automated business process workflow. Further on, you will see how to create a complex workflow in Logic Apps using Azure Function. You will then add a SaaS application to your existing cloud applications and create Queues and Topics in Service Bus on Azure using Azure Portal. Towards the end, we'll explore event hubs and IoT hubs, and you'll get to know more about how to tool and monitor the business workflow in Logic Apps. Using this book, you will be able to support your apps that connect to data anywhere—be it in the cloud or on-premises. Style and approach This practical hands-on tutorial shows you the full capability of App Service and other Azure-based integration services to build scalable and highly available web and mobile apps. It helps you successfully build and support your applications in the cloud or on-premises successfully. We'll debunk the popular myth that switching to cloud is risky—it's not!

**Practical Microservices with Dapr and .NET** - Davide Bedin 2020-12-11

Discover the powerful capabilities of Dapr by implementing a sample application with microservices leveraging the actor model to foster its

strengths. Find out how Dapr helps you simplify the creation of resilient and portable microservices with this book.

**Mastering Azure API Management** - Sven Malvik 2022-03-16

Unsure of how or where to get started with Azure API Management, Microsoft's managed service for securing, maintaining, and monitoring APIs? Then this guide is for you. Azure API Management integrates services like Azure Kubernetes Services (AKS), Function Apps, Logic Apps, and many others with the cloud and provides users with a single, unified, and well-structured façade in the cloud. Mastering Azure API Management is designed to help API developers and cloud engineers learn all aspects of Azure API Management, including security and compliance. It provides a pathway for getting started and learning valuable management and administration skills. You will learn what tools you need to publish a unified API façade towards backend services, independent of where and what they run on. You will begin with an overview of web APIs. You will learn about today's challenges and how a unified API management approach can help you address them. From there you'll dive into the key concepts of Azure API Management and be given a practical view and approach of API development in the context of Azure API Management. You'll then review different ways of integrating Azure API Management into your enterprise architecture. From there, you will learn

how to optimally maintain and administer Azure API Management to secure your APIs, and learn from them, gaining valuable insights through logging and monitoring. What You Will Learn Discover the benefits of an enterprise API platform Understand the basic concepts of API management in the Microsoft cloud Develop and publish your APIs in the context of Azure API Management Onboard users through the developer portal Help your team or other developers to publish their APIs more efficiently Integrate Azure API Management securely into your enterprise architecture Manage and maintain to secure your APIs and gain insights Who This Book Is For API developers, cloud engineers, and Microsoft Azure enthusiasts who want to deep dive into managing an API-centric enterprise architecture with Azure API Management. To get the most out of the book, the reader should have a good understanding of micro services and APIs. Basic coding skills, including some experience with PowerShell and Azure, are also beneficial.

*Programming Microsoft Azure Service Fabric* - Haishi Bai 2018-05-25

Build, operate, and orchestrate scalable microservices applications in the cloud This book combines a comprehensive guide to success with Microsoft Azure Service Fabric and a practical catalog of design patterns and best practices for microservices design, implementation, and operation. Haishi Bai brings together all the information you'll need to

deliver scalable and reliable distributed microservices applications on Service Fabric. He thoroughly covers the crucial DevOps aspects of utilizing Service Fabric, reviews its interactions with key cloud-based services, and introduces essential service integration mechanisms such as messaging systems and reactive systems. Leading Microsoft Azure expert Haishi Bai shows how to: Set up your Service Fabric development environment Program and deploy Service Fabric applications to a local or a cloud-based cluster Compare and use stateful services, stateless services, and the actor model Design Service Fabric applications to maximize availability, reliability, and scalability Improve management efficiency via scripting Configure network security and other advanced cluster settings Collect diagnostic data, and use Azure Operational Management Suite to interpret it Integrate microservices components developed in parallel Use containers to mobilize applications for failover, replication, scaling, and load balancing Streamline containerization with Docker in Linux and Windows environments Orchestrate containers to schedule workloads and maintain services at desired states Implement proven design patterns for common cloud application workloads Balance throughput, latency, scalability, and cost

**Developing Microservices Architecture on Microsoft Azure with Open Source Technologies** - Ovais Khan 2021

Deliver microservices architecture, step-by-step: from defining business problems through development, deployment, and monitoring Increasingly, organizations are modernizing application development by integrating open source technologies into a holistic architecture for delivering high-quality workloads to the cloud. This is a complete, step-by-step guide to building flexible microservices architecture by leveraging Microsoft Azure cloud services, together with key open source technologies such as Java, Node.JS, .NET Core and Angular. Through a realistic case study project, expert Microsoft engineers Ovais Mehboob Ahmed Khan and Arvind Chandaka guide you through every step of technical implementation required to achieve value: establishing end-to-end infrastructure, developing cloud-native applications, automating deployments, monitoring operations, and more. Microsoft engineers Ovais Mehboob Ahmed Khan and Arvind Chandaka show how to: Define application features and business requirements, and map them onto microservices using modeling techniques Design microservices solution architecture that enables high-quality workloads Develop an application front-end, and build microservices with open source technologies Leverage Azure Kubernetes Services for Docker container orchestration Use various patterns to build reliable and resilient microservices Enforce microservices app security, and use Azure AD B2C for user authentication/authorization Establish an API

gateway that provides a unified front door to back-end microservices Set up continuous integration and deployment with Azure DevOps Monitor microservices with Azure Monitor and Azure Application Insights About This Book For everyone interested in developing microservices, including architects, engineers, and consultants Will help IT professionals build new applications, modernize existing systems, migrate workloads, improve app management, and more.

Cloud Native Programming with Golang - Mina Andrawos 2017-12-28

Discover practical techniques to build cloud-native apps that are scalable, reliable, and always available. Key Features Build well-designed and secure microservices. Enrich your microservices with continuous integration and monitoring. Containerize your application with Docker Deploy your application to AWS. Learn how to utilize the powerful AWS services from within your application Book Description Awarded as one of the best books of all time by BookAuthority, Cloud Native Programming with Golang will take you on a journey into the world of microservices and cloud computing with the help of Go. Cloud computing and microservices are two very important concepts in modern software architecture. They represent key skills that ambitious software engineers need to acquire in order to design and build software applications capable of performing and scaling. Go is a modern cross-platform programming language that is very powerful yet

simple; it is an excellent choice for microservices and cloud applications. Go is gaining more and more popularity, and becoming a very attractive skill. This book starts by covering the software architectural patterns of cloud applications, as well as practical concepts regarding how to scale, distribute, and deploy those applications. You will also learn how to build a JavaScript-based front-end for your application, using TypeScript and React. From there, we dive into commercial cloud offerings by covering AWS. Finally, we conclude our book by providing some overviews of other concepts and technologies that you can explore, to move from where the book leaves off. What you will learn

Understand modern software applications architectures Build secure microservices that can effectively communicate with other services Get to know about event-driven architectures by diving into message queues such as Kafka, Rabbitmq, and AWS SQS. Understand key modern database technologies such as MongoDB, and Amazon's DynamoDB Leverage the power of containers Explore Amazon cloud services fundamentals Know how to utilize the power of the Go language to access key services in the Amazon cloud such as S3, SQS, DynamoDB and more. Build front-end applications using ReactJS with Go Implement CD for modern applications Who this book is for This book is for developers who want to begin building secure, resilient, robust, and scalable Go applications that are cloud native. Some

knowledge of the Go programming language should be sufficient. To build the front-end application, you will also need some knowledge of JavaScript programming.

### **C# 8 and .NET Core 3 Projects Using Azure** - Paul Michaels 2019-12-31

Get up to speed with using C# 8 and .NET Core 3.0 features to build real-world .NET Core applications Key Features Learn the core concepts of web applications, serverless computing, and microservices Create an ASP.NET Core MVC application using controllers, routing, middleware and authentication Build modern applications using cutting-edge services from Microsoft Azure Book Description .NET Core is a general-purpose, modular, cross-platform, and opensource implementation of .NET. The latest release of .NET Core 3 comes with improved performance and security features, along with support for desktop applications. .NET Core 3 is not only useful for new developers looking to start learning the framework, but also for legacy developers interested in migrating their apps. Updated with the latest features and enhancements, this updated second edition is a step-by-step, project-based guide. The book starts with a brief introduction to the key features of C# 8 and .NET Core 3. You'll learn to work with relational data using Entity Framework Core 3, before understanding how to use ASP.NET Core. As you progress, you'll discover how you can use .NET Core to create cross-platform applications. Later,



the book will show you how to upgrade your old WinForms apps to .NET Core 3. The concluding chapters will then help you use SignalR effectively to add real-time functionality to your applications, before demonstrating how to implement MongoDB in your apps. Finally, you'll delve into serverless computing and how to build microservices using Docker and Kubernetes. By the end of this book, you'll be proficient in developing applications using .NET Core 3. What you will learn

Understand how to incorporate the Entity Framework Core 3 to build ASP.NET Core MVC applications

Create a real-time chat application using Azure's SignalR service

Gain hands-on experience of working with Cosmos DB

Develop an Azure Function and interface it with an Azure Logic App

Explore user authentication with Identity Server and OAuth2

Understand how to use Azure Cognitive Services to add advanced functionalities with minimal code

Get to grips with running a .NET Core application with Kubernetes

Who this book is for

This book is for developers and programmers of all levels who want to build real-world projects and explore the new features of .NET Core 3. Developers working on legacy desktop software who are looking to migrate to .NET Core 3 will also find this book useful. Basic knowledge of .NET Core and C# is assumed.

*Practical Azure Functions* - Agus Kurniawan 2019-09-27

Start developing Azure Functions and building simple solutions for

serverless computing without worrying about infrastructure. With the increased need for deploying serverless computing, Azure Functions integrates with other Azure resources. This book is a quick reference and consists of a practical and problem-driven approach with the latest technology. Guided by step-by-step explanations and sample projects, you'll set up, build, and deploy Azure Functions to get the most out of this compute-on-demand service. After a foundational introduction to Azure Functions you'll prepare a development environment to serve and process an IoT Telemetry system, create Microservices, and monitor Azure Functions services to get application insights. What You'll Learn

Review the Interaction between Azure Functions and Azure data services

Apply Azure Functions in web applications and build interaction systems for mobile applications

Develop a serverless micro-service

Serve and process IoT Telemetry systems

Monitor Azure Functions services and get application insights

Who This Book Is For

Developers, students, professionals and anyone interested in Azure Function technology and the Azure platform.

Introducing Distributed Application Runtime (Dapr) - Radoslav Gatev

2021-09-04

Use this book to learn the Distributed Application Runtime (Dapr), a new event-driven runtime from Microsoft designed to help developers build

microservices applications, using a palette of languages and frameworks that run everywhere: on-premises, in any cloud, and even on the edge. One of the most popular architectural patterns for implementing large, complex, distributed solutions is the microservices architectural style. Because solutions are composed of services based on various languages, frameworks, and platforms, the more complex and compartmentalized an application becomes, the more considerations a developer has to keep in mind. Much of the time this proves to be difficult. Introducing Distributed Application Runtime (Dapr) is your guide to achieving more with less through patterns. Part I of the book is about understanding microservices and getting up and running with Dapr, either on your machine or in any Kubernetes cluster. From there you are guided through the concepts of Dapr, how it works, and what it can do for you. You will wrap up with various ways to debug Dapr applications using Visual Studio Code locally, inside a container or Kubernetes. In Part II you will jump into the reusable patterns and practices, the building blocks of Dapr. You will go from service invocation, publish and subscribe, state management, resource bindings, and the Actor model to secrets; each building block is covered in detail in its own dedicated chapter. You will learn what Dapr offers from a functional perspective and also how you can leverage the three pillars of observability (logs, metrics, and traces) in order to gain insight into your

applications. In Part III you will explore advanced concepts, including using middleware pipelines, integrating Dapr into web frameworks such as ASP.NET Core, or the runtimes of Azure Logic Apps and Azure Functions. The book features a multi-versed set of examples that cover not only the plain API of Dapr, but also the .NET SDK. Hence, most of the examples are in .NET 5, with a small number in JavaScript to exemplify the use of multiple languages. Examples show you how to securely use Dapr to leverage a variety of services in Microsoft Azure, including Azure Kubernetes Service, Azure Storage, Azure Service Bus, Azure Event Grid, Azure Key Vault, Azure Monitor, and Azure Active Directory among others. What You Will Learn Recognize the challenges and boundaries of microservices architecture Host Dapr inside a Kubernetes cluster or as a standalone process Leverage and use Dapr's ready-to-use patterns and practices Utilize its HTTP/gRPC APIs Use Dapr with ASP.NET Core and in .NET applications (with or without the SDK) Implement observability for Dapr applications Secure Dapr applications Integrate Dapr with the runtime of Azure Logic Apps and Azure Functions Realize the full potential of Visual Studio Code by using the right extensions that will contribute to a better development experience Who This Book Is For Developers and architects who want to utilize a proven set of patterns to help easily implement microservices applications

## Building Microservices with .NET Core 2.0 - Gaurav Arora 2017-12-22

Architect your .NET applications by breaking them into really small pieces - microservices -using this practical, example-based guide. Key Features Start your microservices journey and get a broader perspective on microservices development using C# 7.0 with .NET Core 2.0 Build, deploy, and test microservices using ASP.Net Core, ASP.NET Core API, and Microsoft Azure Cloud Get the basics of reactive microservices Book Description The microservices architectural style promotes the development of complex applications as a suite of small services based on business capabilities. This book will help you identify the appropriate service boundaries within your business. We'll start by looking at what microservices are and their main characteristics. Moving forward, you will be introduced to real-life application scenarios; after assessing the current issues, we will begin the journey of transforming this application by splitting it into a suite of microservices using C# 7.0 with .NET Core 2.0. You will identify service boundaries, split the application into multiple microservices, and define service contracts. You will find out how to configure, deploy, and monitor microservices, and configure scaling to allow the application to quickly adapt to increased demand in the future. With an introduction to reactive microservices, you'll strategically gain further value to keep your code base simple, focusing on what is more

important rather than on messy asynchronous calls. What you will learn Get acquainted with Microsoft Azure Service Fabric Compare microservices with monolithic applications and SOA Learn Docker and Azure API management Define a service interface and implement APIs using ASP.NET Core 2.0 Integrate services using a synchronous approach via RESTful APIs with ASP.NET Core 2.0 Implement microservices security using Azure Active Directory, OpenID Connect, and OAuth 2.0 Understand the operation and scaling of microservices in .NET Core 2.0 Understand the key features of reactive microservices and implement them using reactive extensions Who this book is for This book is for .NET Core developers who want to learn and understand the microservices architecture and implement it in their .NET Core applications. It's ideal for developers who are completely new to microservices or just have a theoretical understanding of this architectural approach and want to gain a practical perspective in order to better manage application complexities.

## *Embracing Microservices Design* - Ovais Mehboob Ahmed Khan

2021-10-29

Develop microservice-based enterprise applications with expert guidance to avoid failures and technological debt with the help of real-world examples Key FeaturesImplement the right microservices adoption strategy to transition from monoliths to microservicesExplore real-world use

cases that explain anti-patterns and alternative practices in microservices development. Discover proven recommendations for avoiding architectural mistakes when designing microservices. Book Description Microservices have been widely adopted for designing distributed enterprise apps that are flexible, robust, and fine-grained into services that are independent of each other. There has been a paradigm shift where organizations are now either building new apps on microservices or transforming existing monolithic apps into microservices-based architecture. This book explores the importance of anti-patterns and the need to address flaws in them with alternative practices and patterns. You'll identify common mistakes caused by a lack of understanding when implementing microservices and cover topics such as organizational readiness to adopt microservices, domain-driven design, and resiliency and scalability of microservices. The book further demonstrates the anti-patterns involved in re-platforming brownfield apps and designing distributed data architecture. You'll also focus on how to avoid communication and deployment pitfalls and understand cross-cutting concerns such as logging, monitoring, and security. Finally, you'll explore testing pitfalls and establish a framework to address isolation, autonomy, and standardization. By the end of this book, you'll have understood critical mistakes to avoid while building microservices and the right practices to adopt early in the product life cycle to ensure the

success of a microservices initiative. What you will learn. Discover the responsibilities of different individuals involved in a microservices initiative. Avoid the common mistakes in architecting microservices for scalability and resiliency. Understand the importance of domain-driven design when developing microservices. Identify the common pitfalls involved in migrating monolithic applications to microservices. Explore communication strategies, along with their potential drawbacks and alternatives. Discover the importance of adopting governance, security, and monitoring. Understand the role of CI/CD and testing. Who this book is for. This practical microservices book is for software architects, solution architects, and developers involved in designing microservices architecture and its development, who want to gain insights into avoiding pitfalls and drawbacks in distributed applications, and save time and money that might otherwise get wasted if microservices designs fail. Working knowledge of microservices is assumed to get the most out of this book.

*Designing API-First Enterprise Architectures on Azure* - Subhajit Chatterjee  
2021-08-24

Innovate at scale through well-architected API-led products that drive personalized, predictive, and adaptive customer experiences. Key Features. Strategize your IT investments by modeling enterprise solutions with an API-centric approach. Build robust and reliable API platforms to

boost business agility and omnichannel delivery  
Create digital value chains through the productization of your APIs  
Book Description API-centric architectures are foundational to delivering omnichannel experiences for an enterprise. With this book, developers will learn techniques to design loosely coupled, cloud-based, business-tier interfaces that can be consumed by a variety of client applications. Using real-world examples and case studies, the book helps you get to grips with the cloud-based design and implementation of reliable and resilient API-centric solutions. Starting with the evolution of enterprise applications, you'll learn how API-based integration architectures drive digital transformation. You'll then learn about the important principles and practices that apply to cloud-based API architectures and advance to exploring the different architecture styles and their implementation in Azure. This book is written from a practitioner's point of view, so you'll discover ideas and practices that have worked successfully in various customer scenarios. By the end of this book, you'll be able to architect, design, deploy, and monetize your API solutions in the Azure cloud while implementing best practices and industry standards. What you will learn  
Explore the benefits of API-led architecture in an enterprise  
Build highly reliable and resilient, cloud-based, API-centric solutions  
Plan technical initiatives based on Well-Architected Framework principles  
Get to grips with the productization and management

of your API assets for value creation  
Design high-scale enterprise integration platforms on the Azure cloud  
Study the important principles and practices that apply to cloud-based API architectures  
Who this book is for  
This book is for solution architects, developers, engineers, DevOps professionals, and IT decision-makers who are responsible for designing and developing large distributed systems. Familiarity with enterprise solution architectures and cloud-based design will help you to comprehend the concepts covered in the book easily.

*Software Architecture with C# 10 and .NET 6* - Gabriel Baptista

2022-03-15

Design scalable and high-performance enterprise applications using the latest features of C# 10 and .NET 6  
Key Features  
Gain comprehensive software architecture knowledge and the skillset to create fully modular apps  
Solve scalability problems in web apps using enterprise architecture patterns  
Master new developments in front-end architecture and the application of AI for software architects  
Book Description  
Software architecture is the practice of implementing structures and systems that streamline the software development process and improve the quality of an app. This fully revised and expanded third edition, featuring the latest features of .NET 6 and C# 10, enables you to acquire the key skills, knowledge, and best practices required to become an effective software

architect. Software Architecture with C# 10 and .NET 6, Third Edition features new chapters that describe the importance of the software architect, microservices with ASP.NET Core, and analyzing the architectural aspects of the front-end in the applications, including the new approach of .NET MAUI. It also includes a new chapter focused on providing a short introduction to artificial intelligence and machine learning using ML.NET, and updated chapters on Azure Kubernetes Service, EF Core, and Blazor. You will begin by understanding how to transform user requirements into architectural needs and exploring the differences between functional and non-functional requirements. Next, you will explore how to choose a cloud solution for your infrastructure, taking into account the factors that will help you manage a cloud-based app successfully. Finally, you will analyze and implement software design patterns that will allow you to solve common development problems. By the end of this book, you will be able to build and deliver highly scalable enterprise-ready apps that meet your business requirements. What you will learn Use proven techniques to overcome real-world architectural challenges Apply architectural approaches such as layered architecture Leverage tools such as containers to manage microservices effectively Get up to speed with Azure features for delivering global solutions Program and maintain Azure Functions using C# 10 Understand when it is best to use test-driven

development (TDD) Implement microservices with ASP.NET Core in modern architectures Enrich your application with Artificial Intelligence Get the best of DevOps principles to enable CI/CD environments Who this book is for This book is for engineers and senior software developers aspiring to become architects or looking to build enterprise applications with the .NET Stack. Basic familiarity with C# and .NET is required to get the most out of this book.

*Practical Microservices with Dapr and .NET* - Davide Bedin 2022-11-11

Use the innovative, highly portable event-driven distributed application runtime to simplify building resilient and scalable microservices for cloud and edge applications. Purchase of the print or Kindle book includes a free eBook in the PDF format. Key Features Build resilient, stateless, and stateful microservice applications that run on the cloud and edge Overcome common issues in distributed systems, such as low latency and scaling, using any language and framework Learn how to expose and operate Dapr applications with multiple options Book Description This second edition will help you get to grips with microservice architectures and how to manage application complexities with Dapr in no time. You'll understand how Dapr simplifies development while allowing you to work with multiple languages and platforms. Following a C# sample, you'll understand how Dapr's runtime, building blocks, and software development kits (SDKs) help you

to simplify the creation of resilient and portable microservices. Dapr provides an event-driven runtime that supports the essential features you need for building microservices, including service invocation, state management, and publish/subscribe messaging. You'll explore all of those in addition to various other advanced features with this practical guide to learning Dapr. With a focus on deploying the Dapr sample application to an Azure Kubernetes Service cluster and to the Azure Container Apps serverless platform, you'll see how to expose the Dapr application with NGINX, YARP, and Azure API Management. By the end of this book, you'll be able to write microservices easily by implementing industry best practices to solve problems related to distributed systems. What you will learn

- Use Dapr to create services, invoking them directly and via pub/sub
- Discover best practices for working with microservice architectures
- Leverage the actor model to orchestrate data and behavior
- Expose API built with Dapr applications via NGINX and Azure API Management
- Use Azure Kubernetes Service to deploy a sample application
- Monitor Dapr applications using Zipkin, Prometheus, and Grafana
- Scale and load test Dapr applications on Kubernetes
- Get to grips with Azure Container Apps as you combine Dapr with a serverless platform

Who this book is for: This book is for developers looking to explore and implement microservices architectures in Dapr applications using .NET

examples. Whether you are new to microservices or have knowledge of this architectural approach and want to get hands-on experience using Dapr, you'll find this book useful. Familiarity with .NET will help you to understand the C# samples and code snippets used in the book.

[Building Microservices with ASP.NET Core](#) - Kevin Hoffman 2017-08-31

At a time when nearly every vertical, regardless of domain, seems to need software running in the cloud to make money, microservices provide the agility and drastically reduced time to market you require. This hands-on guide shows you how to create, test, compile, and deploy microservices, using the ASP.NET Core free and open-source framework. Along the way, you'll pick up good, practical habits for building powerful and robust services. Building microservices isn't about learning a specific framework or programming language; it's about building applications that thrive in elastically scaling environments that don't have host affinity, and that can start and stop at a moment's notice. This practical book guides you through the process. Learn test-driven and API-first development concepts

- Communicate with other services by creating and consuming backing services such as databases and queues
- Build a microservice that depends on an external data source
- Learn about event sourcing, the event-centric approach to persistence
- Use ASP.NET Core to build web applications designed to thrive in the cloud
- Build a service that consumes, or is

consumed by, other services Create services and applications that accept external configuration Explore ways to secure ASP.NET Core microservices and applications

### **Migrating Applications to the Cloud with Azure - Sjoukje Zaal 2019-12-06**

Modernize your apps with Microsoft Azure by moving web, desktop, and mobile apps to the cloud Key Features Decide which migration strategy is most suitable for your organization and create a migration roadmap Move existing infrastructure to Azure and learn strategies to reduce cost, increase storage, and improve ROI Design secure, scalable, and cost-effective solutions with the help of practical examples Book Description Whether you are trying to re-architect a legacy app or build a cloud-ready app from scratch, using the Azure ecosystem with .NET and Java technologies helps you to strategize and plan your app modernization process effectively. With this book, you'll learn how to modernize your applications by using Azure for containerization, DevOps, microservices, and serverless solutions to reduce development time and costs, while also making your applications robust, secure, and scalable. You will delve into improving application efficiency by using container services such as Azure Container Service, Azure Kubernetes Service (AKS), and more. Next, you will learn to modernize your application by implementing DevOps throughout your application development life cycle. You will then focus on

increasing the scalability and performance of your overall application with microservices, before learning how to add extra functionality to your application with Azure serverless solutions. Finally, you'll get up to speed with monitoring and troubleshooting techniques. By the end of this book, you will have learned how to use the Azure ecosystem to refactor, re-architect, and rebuild your web, mobile, and desktop applications. What you will learn Use DevOps and containerization technologies to modernize your applications and infrastructure Build microservices using Azure Service Fabric Develop scalable applications using Azure Functions Manage and deploy your application code and database connectivity Secure and monitor your applications in Azure effectively Design for high availability and disaster recovery Who this book is for This book is for .NET and Java developers who want to modernize their applications using Azure. Solution architects and experienced developers interested in modernizing legacy applications using Azure will also find this book useful. Some prior understanding of cloud computing concepts will be beneficial.

### **The Azure Cloud Native Architecture Mapbook - Stephane Eyskens**

2021-02-17

Improve your Azure architecture practice and set out on a cloud and cloud-native journey with this Azure cloud native architecture guide Key Features Discover the key drivers of successful Azure



architectureImplement architecture maps as a compass to tackle any challengeUnderstand architecture maps in detail with the help of practical use casesBook Description Azure offers a wide range of services that enable a million ways to architect your solutions. Complete with original maps and expert analysis, this book will help you to explore Azure and choose the best solutions for your unique requirements. Starting with the key aspects of architecture, this book shows you how to map different architectural perspectives and covers a variety of use cases for each architectural discipline. You'll get acquainted with the basic cloud vocabulary and learn which strategic aspects to consider for a successful cloud journey. As you advance through the chapters, you'll understand technical considerations from the perspective of a solutions architect. You'll then explore infrastructure aspects, such as network, disaster recovery, and high availability, and leverage Infrastructure as Code (IaC) through ARM templates, Bicep, and Terraform. The book also guides you through cloud design patterns, distributed architecture, and ecosystem solutions, such as Dapr, from an application architect's perspective. You'll work with both traditional (ETL and OLAP) and modern data practices (big data and advanced analytics) in the cloud and finally get to grips with cloud native security. By the end of this book, you'll have picked up best practices and more rounded knowledge of the different architectural perspectives. What

you will learnGain overarching architectural knowledge of the Microsoft Azure cloud platformExplore the possibilities of building a full Azure solution by considering different architectural perspectivesImplement best practices for architecting and deploying Azure infrastructureReview different patterns for building a distributed application with ecosystem frameworks and solutionsGet to grips with cloud-native concepts using containerized workloadsWork with AKS (Azure Kubernetes Service) and use it with service mesh technologies to design a microservices hosting platformWho this book is for This book is for aspiring Azure Architects or anyone who specializes in security, infrastructure, data, and application architecture. If you are a developer or infrastructure engineer looking to enhance your Azure knowledge, you'll find this book useful.

[Beginning Serverless Architectures with Microsoft Azure](#) - Daniel Bass  
2018-07-25

Migrating your application to a cloud-based serverless architecture doesn't have to be difficult. Reduce complexity and minimize the time you spend administering servers or worrying about availability with this comprehensive guide to serverless applications on Azure. Key Features Provides information on integration of Azure products Plan and implement your own serverless backend to meet tried-and-true development standards Includes step-by-step instructions to help you navigate

advanced concepts and application integrations

**Book Description** Many businesses are rapidly adopting a microservices-first approach to development, driven by the availability of new commercial services like Azure Functions and AWS Lambda. In this book, we'll show you how to quickly get up and running with your own serverless development on Microsoft Azure. We start by working through a single function, and work towards integration with other Azure services like App Insights and Cosmos DB to handle common user requirements like analytics and highly performant distributed storage. We finish up by providing you with the context you need to get started on a larger project of your own choosing, leaving you equipped with everything you need to migrate to a cloud-first serverless solution. What you will learn

- Identify the key advantages and disadvantages of serverless development
- Build a fully-functioning serverless application and utilize a wide variety of Azure services
- Create, deploy, and manage your own Azure Functions in the cloud
- Implement core design principles for writing effective serverless code

**Who this book is for** This book is ideal for back-end developers or engineers who want a quick hands-on introduction to developing serverless applications within the Microsoft ecosystem.

*Mastering Azure Serverless Computing* - Lorenzo Barbieri 2019-11-22

Become an expert in implementing Azure Functions to work seamlessly

with your serverless applications

**Key Features** Develop scalable, robust multi-tier apps without worrying about infrastructure needs

**Deploy and manage** cost-effective and highly available serverless apps using Azure Functions

**Accelerate** enterprise-level application development by seamlessly integrating different cloud services with Azure Functions

**Book Description** Application development has evolved from traditional monolithic app development to using serverless options and microservices. This book is designed to guide you through using Microsoft's Azure Functions to process data, integrate systems, and build simple APIs and microservices. You will discover how to apply serverless computing to speed up deployment and reduce downtime. You'll also explore Azure Functions, including its core functionalities and essential tools, along with understanding how to debug and even customize Azure Functions. In addition to this, the book will take you through how you can effectively implement DevOps and automation in your working environment. Toward the concluding chapters, you'll cover some quick tips, troubleshooting techniques, and real-world serverless use cases that will help you make the most of serverless computing. By the end of this book, you will have gained the skills you need to develop and deliver cost-effective Azure serverless solutions. What you will learn

- Create and deploy advanced Azure Functions
- Learn to extend the runtime of Azure Functions

Orchestrate your logic through code or a visual workflow Add caching, security, routing, and filtering to your APIs Use serverless technologies in real-world scenarios Understand how to apply DevOps and automation to your working environment Who this book is for This book is designed for cloud administrators, architects, and developers interested in building scalable systems and deploying serverless applications with Azure Functions. Prior knowledge of core Microsoft Azure services and Azure Functions is necessary to understand the topics covered in this book.

**Google Cloud Cookbook** - Rui Costa 2021-10-08

Get quick hands-on experience with Google Cloud. This cookbook provides a variety of self-contained recipes that show you how to use Google Cloud services for your enterprise application. Whether you're looking for practical ways to apply microservices, AI, analytics, security, or networking solutions, these recipes take you step-by-step through the process and provide discussions that explain how and why the recipes work. Ideal for system engineers and administrators, developers, network and database administrators, and data analysts, this cookbook helps you get started with Google Cloud regardless of your level of experience.

Google veterans Rui Costa and Drew Hodun also cover advanced-level Google Cloud services for those who have appreciable experience with the platform. Learn how to get started with Google Cloud Understand the

depth of services Google Cloud provides Gain hands-on experience using practical examples and labs Explore topics that include BigQuery, Cloud Run, and Kubernetes Build and run mobile and web applications on Google Cloud Examine ways to build your cloud applications for scale Build a minimum viable product (MVP) app to use in production Learn data platform and pipeline skills

**Hands-On Kubernetes on Azure** - Nills Franssens 2020-05-18

Kick-start your DevOps career by learning how to effectively deploy Kubernetes on Azure in an easy, comprehensive, and fun way with hands-on coding tasks Key Features Understand the fundamentals of Docker and Kubernetes Learn to implement microservices architecture using the Kubernetes platform Discover how you can scale your application workloads in Azure Kubernetes Service (AKS) Book Description From managing versioning efficiently to improving security and portability, technologies such as Kubernetes and Docker have greatly helped cloud deployments and application development. Starting with an introduction to Docker, Kubernetes, and Azure Kubernetes Service (AKS), this book will guide you through deploying an AKS cluster in different ways. You'll then explore the Azure portal by deploying a sample guestbook application on AKS and installing complex Kubernetes apps using Helm. With the help of real-world examples, you'll also get to grips with scaling your application

and cluster. As you advance, you'll understand how to overcome common challenges in AKS and secure your application with HTTPS and Azure AD (Active Directory). Finally, you'll explore serverless functions such as HTTP triggered Azure functions and queue triggered functions. By the end of this Kubernetes book, you'll be well-versed with the fundamentals of Azure Kubernetes Service and be able to deploy containerized workloads on Microsoft Azure with minimal management overhead. What you will learn Plan, configure, and run containerized applications in production Use Docker to build apps in containers and deploy them on Kubernetes Improve the configuration and deployment of apps on the Azure Cloud Store your container images securely with Azure Container Registry Install complex Kubernetes applications using Helm Integrate Kubernetes with multiple Azure PaaS services, such as databases, Event Hubs and Functions. Who this book is for This book is for aspiring DevOps professionals, system administrators, developers, and site reliability engineers looking to understand test and deployment processes and improve their efficiency. If you're new to working with containers and orchestration, you'll find this book useful.

**A Developer's Guide to Cloud Apps Using Microsoft Azure** - Hamida Rebai Trabelsi 2023-02-17

Build and deploy modern and secure applications on Microsoft Azure by

implementing best practices, patterns, and new technologies with this easy-to-follow guide Purchase of the print or Kindle book includes a free PDF eBook Key Features Learn various methods to migrate legacy applications to cloud using different Azure services Implement continuous integration and deployment as a best practice for DevOps and agile development Get started with building cloud-based applications using containers and orchestrators in different scenarios Book Description Companies face several challenges during cloud adoption, with developers and architects needing to migrate legacy applications and build cloud-oriented applications using Azure-based technologies in different environments. A Developer's Guide to Cloud Apps Using Microsoft Azure helps you learn how to migrate old apps to Azure using the Cloud Adoption Framework and presents use cases, as well as build market-ready secure and reliable applications. The book begins by introducing you to the benefits of moving legacy apps to the cloud and modernizing existing ones using a set of new technologies and approaches. You'll then learn how to use technologies and patterns to build cloud-oriented applications. This app development book takes you on a journey through three major services in Azure, namely Azure Container Registry, Azure Container Instances, and Azure Kubernetes Service, which will help you build and deploy an application based on microservices. Finally, you'll be

able to implement continuous integration and deployment in Azure to fully automate the software delivery process, including the build and release processes. By the end of this book, you'll be able to perform application migration assessment and planning, select the right Azure services, and create and implement a new cloud-oriented application using Azure containers and orchestrators. What you will learn

Get to grips with new patterns and technologies used for cloud-native applications  
Migrate old applications and databases to Azure with ease  
Work with containers and orchestrators to automate app deployment  
Select the right Azure service for deployment as per the use cases  
Set up CI/CD pipelines to deploy apps and services on Azure DevOps  
Leverage Azure App Service to deploy your first application  
Build a containerized app using Docker and Azure Container Registry

Who this book is for  
This book is for cloud developers, software architects, system administrators, developers, and computer science students looking to understand the new role of the software architect or developer in the cloud world. Professionals looking to enhance their cloud and cloud-native programming concepts will also find this book useful. A sound background in C#, ASP.NET Core, and Visual Studio (any recent version) and basic knowledge of cloud computing will be helpful.

**Developing Cloud Native Applications in Azure using .NET Core** - Rekha

Kodali 2020-02-01

Guide to designing and developing cloud native applications in Azure

DESCRIPTION The mainstreaming of Cloud Native Architecture as an enterprise discipline is well underway. According to the Forbes report in January 2018, 83% of the enterprise workloads will be in the cloud by 2020 and 41% of the enterprise workloads will run on public cloud platforms, while another 22% will be running on hybrid cloud platforms. Customers are embarking on the enterprise digital transformation journeys. Adopting cloud and cloud native architectures and microservices is an important aspect of the journey. This book starts with a brief introduction on the basics of cloud native applications, cloud native application patterns. Then it covers the cloud native options available in Azure. The objective of the book is to provide practical guidelines to an architect/designer/consultant/developer, who is a part of the Cloud application definition Team. The book articulates a methodology that the implementation team needs to follow in a step-by-step manner and adopt them to fulfil the requirements for enablement of the Cloud Native application. It emphasizes on the interpersonal skills and techniques for organizing and directing the Cloud Native definition, leadership buy-in, leading the transition from planning to implementation. It also highlights the steps to be followed for performing the cloud native applications, cloud native patterns in the development of Cloud native applications, Cloud

native options available in Azure, Developing BOT, Microservices based on Azure. It also covers how to develop simple IoT applications, Machine learning based applications, server less architecture, using Azure with a practical and pragmatic approach. This book embraces a structured approach organized around the following key themes, which represent the typical phases that an enterprise traverses during its Cloud Native application journey:

- Basics of Cloud Native Applications: It covers basics of cloud native applications using .NET core.
- Cloud Native Application Patterns: The reader will understand the patterns for developing Cloud Native Applications.
- Cloud Native Options available in Azure: The reader will understand the different options available in Azure.
- Developing a Simple BOT using .NET Core: The reader will understand the Azure BOT framework basics and will learn how to develop a simple BOT.
- Developing cloud native applications leveraging Microservices: The reader will understand the concepts of developing micro services using the Azure API Gateway Manager.
- Developing Integration capabilities using serverless architecture: The reader will understand the integration capabilities and various options available in Azure
- Developing a simple IoT application: The reader will understand the basics of developing IoT applications.
- Developing a simple ML based application: The reader will understand Machine Learning basics and how

to develop a simple ML application

- Different enterprise use cases, which enable digital transformation using the Cloud Native Applications: The reader will learn about different use cases that can be built using cloud native applications
- KEY FEATURES (Add 5-7 key features only)
- Basics of Cloud Native Applications
- Designing Microservices
- Different cloud native options for developing Cloud Native Applications in Azure
- BOTs, Web Apps, Mobile Apps, Logic Apps, Service Bus, Azure Functions
- Azure IOT Applications
- Azure Machine Learning Basics
- Enterprise Digital Journeys

WHAT WILL YOU LEARN This book aims to:

- Demonstrate the importance of a Cloud Native application in elevating the effectiveness of organizational transformation programs and digital enterprise journeys, using MS Azure
- Disseminate current advancements and thought leadership in the area of Cloud Native architecture, in the context of digital enterprises
- Provide initiatives with evidence-based, credible, field tested and practical guidance in crafting their respective architectures; and
- Showcase examples and experiences of the innovative use of Cloud Native Applications in enhancing transformation initiatives.

WHO THIS BOOK IS FOR The book is intended for anyone looking for a career in Cloud technology, all aspiring Cloud Architects who want to learn Cloud Native Architectures, Microservices, IoT, BoT and Microsoft Azure platform and working professionals who want to switch

their career in Cloud Technology. While no prior knowledge of Azure or related technologies is assumed, it will be helpful to have some .Net programming experience. In addition, the target audience of this book are,

- Business Leaders, Chief Architects, Analysts and Designers seeking better, quicker and easier approaches to respond to needs of their internal and external customers;
- CIOs/CTOs of business software companies interested in incorporating Cloud Native architecture to differentiate their products and services offerings and increasing the value proposition to their customers;
- Consultants and practitioners desirous of new solutions and technologies to improve productivity of their clients;
- Academic and consulting researchers looking to uncover and characterize new research problems and programmes
- Practitioners and professionals involved with organizational technology strategic planning, technology procurement, management of technology projects, consulting and advising on technology issues and management of total cost of ownership.

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7. Developing a

8. Developing a simple IoT application
9. Developing a simple ML based application

Different enterprise use cases which enable digital transformation using Cloud Native Applications

*Building Microservices with .NET Core* - Gaurav Kumar Arora 2017-06-14

Architect your .NET applications by breaking them into really small pieces—microservices—using this practical, example-based guide

About This Book Start your microservices journey and understand a broader perspective of microservices development

Build, deploy, and test microservices using ASP.Net MVC, Web API, and Microsoft Azure Cloud

Get started with reactive microservices and understand the fundamentals behind it

Who This Book Is For This book is for .NET Core developers who want to learn and understand microservices architecture and implement it in their .NET Core applications. It's ideal for developers who are completely new to microservices or have just a theoretical understanding of this architectural approach and want to gain a practical perspective in order to better manage application complexity.

What You Will Learn

- Compare microservices with monolithic applications and SOA
- Identify the appropriate service boundaries by mapping them to the relevant bounded contexts
- Define the service interface and implement the APIs using ASP.NET Web API
- Integrate the services via synchronous and asynchronous mechanisms
- Implement microservices security using Azure

Active Directory, OpenID Connect, and OAuth 2.0 Understand the operations and scaling of microservices in .NET Core Understand the testing pyramid and implement consumer-driven contract using pact net core Understand what the key features of reactive microservices are and implement them using reactive extension In Detail Microservices is an architectural style that promotes the development of complex applications as a suite of small services based on business capabilities. This book will help you identify the appropriate service boundaries within the business. We'll start by looking at what microservices are, and what the main characteristics are. Moving forward, you will be introduced to real-life application scenarios, and after assessing the current issues, we will begin the journey of transforming this application by splitting it into a suite of microservices. You will identify the service boundaries, split the application into multiple microservices, and define the service contracts. You will find out how to configure, deploy, and monitor microservices, and configure scaling to allow the application to quickly adapt to increased demand in the future. With an introduction to the reactive microservices, you strategically gain further value to keep your code base simple, focusing on what is more important rather than the messy asynchronous calls. Style and approach This guide serves as a stepping stone that helps .NET Core developers in their microservices architecture. This book provides just

enough theory to understand the concepts and apply the examples.

[.NET Core 2.0 By Example](#) - Rishabh Verma 2018-03-20

Build cross-platform solutions with .NET Core 2.0 through real-life scenarios Key Features Bridges the gap between learning and doing and improves your software development skills Covers the best practices of .NET development to improve your productivity Example-based approach to get you started quickly with software programming Book Description With the rise in the number of tools and technologies available today, developers and architects are always exploring ways to create better and smarter solutions. Before, the differences between target platforms was a major roadblock, but that's not the case now. .NET Core 2.0 By Example will take you on an exciting journey to building better software. This book provides fresh and relevant content to .NET Core 2.0 in a succinct format that's enjoyable to read. It also delivers concepts, along with the implications, design decisions, and potential pitfalls you might face when targeting Linux and Windows systems, in a logical and simple way. With the .NET framework at its center, the book comprises of five varied projects: a multiplayer Tic-tac-toe game; a real-time chat application, Let'sChat; a chatbot; a microservice-based buying-selling application; and a movie booking application. You will start each chapter with a high-level overview of the content, followed by the above example applications



described in detail. By the end of each chapter, you will not only be proficient with the concepts, but you'll also have created a tangible component in the application. By the end of the book, you will have built five solid projects using all the tools and support provided by the .NET Core 2.0 framework. What you will learn

- Build cross-platform applications with ASP.NET Core 2.0 and its tools
- Integrate, host, and deploy web apps with the cloud (Microsoft Azure)
- Leverage the ncurses native library to extend console capabilities in .NET Core on Linux and interop with native code
- .NET Core on Linux and learn how to interop with existing native code
- Reuse existing .NET Framework and Mono assemblies from .NET Core 2.0 applications
- Develop real-time web applications using ASP.NET Core
- Learn the differences between SOA and microservices and get started with microservice development using ASP.NET Core 2.0
- Walk through functional programming with F# and .NET Core from scratch
- Who this book is for

If you are a developer or architect and want to learn how to build cross-platform solutions using Microsoft .NET Core, this book is for you. It is assumed that you have some knowledge of the .NET Framework, OOP, and C# (or a similar programming language).

**Implementing Azure: Putting Modern DevOps to Use** - Florian Klaffenbach

2019-01-31

Explore powerful Azure DevOps solutions to develop and deploy your

software faster and more efficiently. Key Features

- Build modern microservice-based systems with Azure architecture
- Learn to deploy and manage cloud services and virtual machines
- Configure clusters with Azure Service Fabric for deployment

**Book Description** This Learning Path helps you understand microservices architecture and leverage various services of Microsoft Azure Service Fabric to build, deploy, and maintain highly scalable enterprise-grade applications. You will learn to select an appropriate Azure backend structure for your solutions and work with its toolkit and managed apps to share your solutions with its service catalog. As you progress through the Learning Path, you will study Azure Cloud Services, Azure-managed Kubernetes, and Azure Container Services deployment techniques. To apply all that you've understood, you will build an end-to-end Azure system in scalable, decoupled tiers for an industrial bakery with three business domains. Toward the end of this Learning Path, you will build another scalable architecture using Azure Service Bus topics to send orders between decoupled business domains with scalable worker roles processing these orders. By the end of this Learning Path, you will be comfortable in using development, deployment, and maintenance processes to build robust cloud solutions on Azure. This Learning Path includes content from the following Packt products:

- Learn Microsoft Azure by Mohamed Wali
- Implementing Azure Solutions - Second

Edition by Florian Klaffenbach, Oliver Michalski, Markus Klein  
Microservices with Azure by Namit Tanasseri and Rahul Rai  
What you will learn  
Study various Azure Service Fabric application programming models  
Create and manage a Kubernetes cluster in Azure  
Kubernetes Service Use site-to-site VPN and ExpressRoute connections in your environment  
Design an Azure IoT app and learn to operate it in various scenarios  
Implement a hybrid Azure design using Azure Stack  
Build Azure SQL databases with Code First Migrations  
Integrate client applications with Web API and SignalR on Azure  
Implement the Azure Active Directory (Azure AD) across the entire system  
Who this book is for  
If you are an IT system architect, network admin, or a DevOps engineer who wants to implement Azure solutions for your organization, this Learning Path is for you. Basic knowledge of the Azure Cloud platform will be beneficial.

*Microservice by examples using .NET Core* - Pujarini Mohapatra, Biswa  
2019-01-24

This book predominately covers Microservices architecture with real-world example which can help professionals with ease of adoption of this technology. Following the trend of modularity in real world, the idea behind *Microservice by Examples* is to allow developers to build their applications from various independent components which can be easily changed, removed or upgraded. Also, it is relevant now because of enterprises are

moving towards DevOps/ Modernization, this book will emphasize on containers and Dockers as well.

*Hands-on Kubernetes on Azure* - Nills Franssens 2021-05-17

Kubernetes has emerged as a leader among management platforms for container orchestration. Hands-On Kubernetes on Azure enables you to strengthen your grasp of the basic and advanced functionalities of Kubernetes on Microsoft Azure.

**Microservices and Azure Service Fabric Basics for Developers** - 2017

Get started with Microsoft Azure Service Fabric, and learn the key development techniques necessary to produce highly scalable microservices-based cloud applications in Azure.

*Embrace Microservices Design* - Ovais Mehboob Ahmed Khan 2021-10-29

Develop microservice-based enterprise applications with expert guidance to avoid failures and technological debt with the help of real-world examples  
Key Features: Implement the right microservices adoption strategy to transition from monoliths to microservices  
Explore real-world use cases that explain anti-patterns and alternative practices in microservices development  
Discover proven recommendations for avoiding architectural mistakes when designing microservices  
Book Description: Microservices have been widely adopted for designing distributed enterprise apps that are flexible, robust, and fine-grained into services that

are independent of each other. There has been a paradigm shift where organizations are now either building new apps on microservices or transforming existing monolithic apps into microservices-based architecture. This book explores the importance of anti-patterns and the need to address flaws in them with alternative practices and patterns. You'll identify common mistakes caused by a lack of understanding when implementing microservices and cover topics such as organizational readiness to adopt microservices, domain-driven design, and resiliency and scalability of microservices. The book further demonstrates the anti-patterns involved in re-platforming brownfield apps and designing distributed data architecture. You'll also focus on how to avoid communication and deployment pitfalls and understand cross-cutting concerns such as logging, monitoring, and security. Finally, you'll explore testing pitfalls and establish a framework to address isolation, autonomy, and standardization. By the end of this book, you'll have understood critical mistakes to avoid while building microservices and the right practices to adopt early in the product life cycle to ensure the success of a microservices initiative. What You Will Learn: Discover the responsibilities of different individuals involved in a microservices initiative Avoid the common mistakes in architecting microservices for scalability and resiliency Understand the importance of domain-driven design when

developing microservices Identify the common pitfalls involved in migrating monolithic applications to microservices Explore communication strategies, along with their potential drawbacks and alternatives Discover the importance of adopting governance, security, and monitoring Understand the role of CI/CD and testing Who this book is for: This practical microservices book is for software architects, solution architects, and developers involved in designing microservices architecture and its development, who want to gain insights into avoiding pitfalls and drawbacks in distributed applications, and save time and money that might otherwise get wasted if microservices designs fail. Working knowledge of microservices is assumed to get the most out of this book.

[Microservices, IoT and Azure](#) - Bob Familiar 2015-11-07

This book provides practical guidance for adopting a high velocity, continuous delivery process to create reliable, scalable, Software-as-a-Service (SaaS) solutions that are designed and built using a microservice architecture, deployed to the Azure cloud, and managed through automation. Microservices, IoT, and Azure offers software developers, architects, and operations engineers' step-by-step directions for building SaaS applications—applications that are available 24x7, work on any device, scale elastically, and are resilient to change—through code, script, exercises, and a working reference implementation. The book provides a

working definition of microservices and contrasts this approach with traditional monolithic Layered Architecture. A fictitious, homebiomedical startup is used to demonstrate microservice architecture and automation capabilities for cross-cutting and business services as well as connected device scenarios for Internet of Things (IoT). Several Azure PaaS services are detailed including Storage, SQL Database, DocumentDb, Redis Cache, Cloud Services, Web API's, API Management, IoT Hub, IoT Suite, Event Hub, and Stream Analytics. Finally the book looks to the future and examines Service Fabric to see how microservices are becoming the de facto approach to building reliable software in the cloud. In this book, you'll learn: What microservices are and why are they're a compelling architecture pattern for SaaS applications How to design, develop, and deploy microservices using Visual Studio, PowerShell, and Azure Microservice patterns for cross-cutting concerns and business capabilities Microservice patterns for Internet of Things and big data analytics solutions using IoT Hub, Event Hub, and Stream Analytics Techniques for automating microservice provisioning, building, and deployment What Service Fabric is and how it's the future direction for microservices on Microsoft Azure

[Security and Microservice Architecture on AWS](#) - Gaurav Raje 2021-09-08

Security is usually an afterthought when organizations design

microservices for cloud systems. Most companies today are exposed to potential security threats, but their responses are often more reactive than proactive. This leads to unnecessarily complicated systems that are hard to implement and even harder to manage and scale. Author Gaurav Raje shows you how to build highly secure systems on AWS without increasing overhead. Ideal for cloud solution architects and software developers with AWS experience, this practical book starts with a high-level architecture and design discussion, then explains how to implement your solution in the cloud while ensuring that the development and operational experience isn't compromised. By leveraging the AWS Shared Responsibility Model, you'll be able to: Develop a modular architecture using microservices that aims to simplify compliance with various regulations in finance, medicine, and legal services Introduce various AWS-based security controls to help protect your microservices from malicious actors Leverage the modularity of the architecture to independently scale security mechanisms on individual microservices Improve the security posture without compromising the autonomy or efficiency of software development teams

**Cloud Native Infrastructure with Azure** - Nishant Singh 2022-02-09

The cloud is becoming the de facto home for companies ranging from enterprises to startups. Moving to the cloud means moving your applications from monolith to microservices. But once you do, running and

maintaining these services brings its own level of complexity. The answer? Modularity, deployability, observability, and self-healing capacity through cloud native development. With this practical book, Nishant Singh and Michael Kehoe show you how to build a true cloud native infrastructure using Microsoft Azure or another cloud computing solution by following guidelines from the Cloud Native Computing Foundation (CNCF). DevOps and site reliability engineers will learn how adapting applications to cloud native early in the design phase helps you fully utilize the elasticity and distributed nature of the cloud. This book helps you explore: Why go cloud native? How to use infrastructure as code What it takes to containerize an application Why and how Kubernetes is the "grand orchestrator" How to create a Kubernetes cluster on Azure How observability complements monitoring How to use service discovery and a service mesh to find new territories How networking and policy management serve as gatekeepers How distributed databases and storage work

[Microservices Design Patterns in .NET](#) - Trevor Williams 2023-01-13

Learn to be deliberate and intentional in your design, technology, and pattern choices when developing an application using a microservices architecture. Key Features Tackle common design problems when developing a microservices application using .NET Core Explore applying S.O.L.I.D development principles in developing a stable microservice

application Use your knowledge to solve common microservice application design challenges Book Description Are you a developer who needs to fully understand the different patterns and benefits that they bring to designing microservices? If yes, then this book is for you. Microservices Design Patterns in .NET will help you appreciate the various microservice design concerns and strategies that can be used to navigate them. Making a microservice-based app is no easy feat and there are many concerns that need to be addressed. As you progress through the chapters of this guide, you'll dive headfirst into the problems that come packed with this architectural approach, and then explore the design patterns that address these problems. You'll also learn how to be deliberate and intentional in your architectural design to overcome major considerations in building microservices. By the end of this book, you'll be able to apply critical thinking and clean coding principles when creating a microservices application using .NET Core. What you will learn Use Domain-Driven Design principles in your microservice design Leverage patterns like event sourcing, database-per-service, and asynchronous communication Build resilient web services and mitigate failures and outages Ensure data consistency in distributed systems Leverage industry standard technology to design a robust distributed application Find out how to secure a microservices-designed application Use containers to handle lightweight

microservice application deployment Who this book is for If you are a .NET developer, senior developer, software architect, or DevOps engineer who wants to explore the pros and cons, intricacies, and overall implementation of microservice architecture, then this book is for you. You'll also get plenty of useful insights if you're seeking to expand your knowledge of different design patterns and supporting technologies. Basic experience with application and API development with .NET Core (2+) and C# will help you get the most out of this book.

### **Developing Cloud Native Applications in Azure using .NET Core - Kodali**

Rekha 2020-02-01

Guide to designing and developing cloud native applications in Azure Key

Features a- Basics of Cloud Native Applications a- Designing

Microservices a- Different cloud native options for developing Cloud Native

Applications in Azure a- BOTs, Web Apps, Mobile Apps, Logic Apps,

Service Bus, Azure Functions a- Azure IOT Applications a- Azure Machine

Learning Basics a- Enterprise Digital Journeys Description The

mainstreaming of the cloud-native architecture as an enterprise discipline

is well underway. According to the Forbes report, in January 2018, 83% of

enterprise workloads will be in the cloud by 2020, 41% of enterprise

workloads will run on public cloud platforms while another 22% will be

running on hybrid cloud platforms. Customers are embarking on enterprise

digital transformation journeys. Adopting cloud, cloud-native architectures, and microservices is an important aspect of the journey. This book starts with a brief introduction to the basics of cloud-native applications and cloud-native application patterns. It covers cloud-native options available in Azure. The objective of the book is to provide practical guidelines to an architect/designer/consultant/developer who is part of the Cloud application definition team. The book articulates a methodology that the implementation team needs to follow in a systematic manner and adapt them to fulfill the requirements for enabling the cloud-native application. It emphasizes on the interpersonal skills and techniques for organizing and directing the cloud-native definition, leadership buy-in, and leading the transition from planning to implementation. It also highlights steps to be followed and the patterns for developing cloud-native applications, cloud-native options available in Azure, developing BOT, and microservices based on Azure. It also covers how to develop simple IoT applications, Machine learning-based applications, and the serverless architecture using Azure with a practical and pragmatic approach. This book embraces a structured approach around the following key themes that represent the typical phases an enterprise traverses during its cloud-native application journey. What will you learn This book aims to: a- Demonstrate the importance of cloud-native applications in elevating the effectiveness of

organizational transformation programs and digital enterprise journeys using MS Azure.

a- Disseminate current advancements and thought leadership in the area of cloud-native architecture in the context of digital enterprises.

a- Provide initiatives with evidence-based, credible, field-tested and practical guidance in designing their respective architectures.

Who this book is for

The book is intended for anyone looking for a career in Cloud technology, especially all aspiring Cloud Architects who want to learn cloud-native architectures, Microservices, IoT, BOT and Microsoft Azure platform.

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1. Basics of Cloud Native Applications
2. Cloud Native Application Patterns
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4. Developing a Simple BOT using .NET Core
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6. Developing Integration capabilities using serverless architecture
7. Developing a simple IoT application
8. Developing a simple ML based application
9. Different enterprise use cases which enable digital transformation using Cloud Native Applications

*Building Microservices Applications on Microsoft Azure* - Harsh Chawla  
2019-07-17

Implement microservices starting with their architecture and moving on to their deployment, manageability, security, and monitoring. This book

focuses on the key scenarios where microservices architecture is preferred over a monolithic architecture. Building Microservices Applications on Microsoft Azure begins with a survey of microservices architecture compared to monolithic architecture and covers microservices implementation in detail. You'll see the key scenarios where microservices architecture is preferred over a monolithic approach. From there, you will explore the critical components and various deployment options of microservices on platforms such as Microsoft Azure (public cloud) and Azure Stack (hybrid cloud). This includes in-depth coverage of developing, deploying, and monitoring microservices on containers and orchestrating with Azure Service Fabric and Azure Kubernetes Cluster (AKS). This book includes practical experience from large-scale enterprise deployments, therefore it can be a quick reference for solution architects and developers to understand the critical factors while designing a microservices application.

What You Will Learn

- Explore the use cases of microservices and monolithic architecture
- Discover the architecture patterns to build scalable, agile, and secure microservices applications
- Develop and deploy microservices using Azure Service Fabric and Azure Kubernetes Service
- Secure microservices using the gateway pattern
- See the deployment options for Microservices on Azure Stack
- Implement database patterns to handle the complexities introduced by microservices

Who This Book Is For

Architects and consultants who work on Microsoft Azure and manage large-scale deployments.

**Software Architecture with C# 9 and .NET 5 - Gabriel Baptista 2020-12-28**

Design scalable and high-performance enterprise applications using the latest features of C# 9 and .NET 5 Key Features Gain fundamental and comprehensive software architecture knowledge and the skillset to create fully modular apps Design high-performance software systems using the latest features of .NET 5 and C# 9 Solve scalability problems in web apps using enterprise architecture patterns Book Description Software architecture is the practice of implementing structures and systems that streamline the software development process and improve the quality of an app. This fully revised and expanded second edition, featuring the latest features of .NET 5 and C# 9, enables you to acquire the key skills, knowledge, and best practices required to become an effective software architect. This second edition features additional explanation of the principles of Software architecture, including new chapters on Azure Service Fabric, Kubernetes, and Blazor. It also includes more discussion on security, microservices, and DevOps, including GitHub deployments for the software development cycle. You will begin by understanding how to transform user requirements into architectural needs and exploring the differences between functional and non-functional requirements. Next, you

will explore how to carefully choose a cloud solution for your infrastructure, along with the factors that will help you manage your app in a cloud-based environment. Finally, you will discover software design patterns and various software approaches that will allow you to solve common problems faced during development. By the end of this book, you will be able to build and deliver highly scalable enterprise-ready apps that meet your organization's business requirements. What you will learn Use different techniques to overcome real-world architectural challenges and solve design consideration issues Apply architectural approaches such as layered architecture, service-oriented architecture (SOA), and microservices Leverage tools such as containers, Docker, Kubernetes, and Blazor to manage microservices effectively Get up to speed with Azure tools and features for delivering global solutions Program and maintain Azure Functions using C# 9 and its latest features Understand when it is best to use test-driven development (TDD) as an approach for software development Write automated functional test cases Get the best of DevOps principles to enable CI/CD environments Who this book is for This book is for engineers and senior software developers aspiring to become architects or looking to build enterprise applications with the .NET Stack. Basic familiarity with C# and .NET is required to get the most out of this book.