

Microservices Patterns And Applications Designing Fine Grained Services By Applying Patterns

Architectural Patterns Architecture Patterns with Python Microservices Security in Action Building Microservices Microservices for the Enterprise Spring 5 Design Patterns Microservices Patterns Video Edition Microservice Architecture Microservices Patterns The Art of Scalability Fowler Microservices: Patterns and Applications The Tao of Microservices Microservices and Containers POJOs in Action Enterprise Integration Patterns Building Microservices Applications on Microsoft Azure Cloud Native Patterns Essentials of Microservices Architecture Building Microservices with Spring Kubernetes Patterns Implementing Domain-Driven Design Microservices in Action TypeScript Microservices Microservices Patterns Building Microservices with Go Micro Frontends in Action Microservices Microservices from Theory to Practice: Creating Applications in IBM Bluemix Using the Microservices Approach Spring Microservices in Action Microservices with Azure Django Design Patterns and Best Practices Designing Data-Intensive Applications Service Design Patterns Hands-On Microservices with Spring Boot and Spring Cloud Monolith to Microservices Microservice Patterns and Best Practices Designing Distributed Systems Java EE 8 Design Patterns and Best Practices Practical Microservices Architectural Patterns

Architectural Patterns

A complete practitioner's catalog of proven domain services design solutions that can help any organization leverage SOA's full benefits * *Provides a vocabulary of proven SOA design solutions, with concrete examples and code that is easy for architects to adapt and implement. *By Rob Daigneau, one of the industry's leading experts in complex systems integration. *Helps architects and IT leaders accurately set stakeholder expectations for major SOA initiatives. Service-oriented architectures are typically called upon to deliver two general categories of services: enterprise services and domain services. Enterprise services are essentially composite services that typically leverage technologies such as message-oriented middleware. Domain services are the building blocks these composites depend upon. Each service category is best served by a distinct set of design solutions. This is the first book to systematically identify and explain best practice patterns for domain services. Rob Daigneau expands upon the Service Layer concept (covered expertly by Fowler in Patterns of Enterprise Application Architecture) domain services can be used with Enterprise Integration Patterns (made famous by Hohpe and Woolf). Daigneau begins by reviewing SOA concepts, illuminating the distinctions between enterprise and domain services, and identifying key relationships between domain services and other pattern groups.

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Next, he introduces each essential pattern for creating and delivering domain services, providing a vocabulary of design solutions that architects and other IT professionals can implement by referencing and adapting the concrete examples he supplies.

Architecture Patterns with Python

Microservices, a form of software architecture approach, allows companies to deliver services and products faster, and with scalability and flexibility. The guiding principle of microservices is to build an application by breaking down its business components into smaller services, which can be deployed and operated independently from each other. This sets it apart from the more traditional, monolithic architecture wherein all components are bundled together. Companies that successfully adopt the appropriate microservice patterns for their application can greatly increase the time it takes to convert their ideas into customer value, which sustains long-term customer relationships and generates revenue. This is because, with microservices, development teams do not have to rewrite and deploy the whole application when new features are added. In addition, it takes less time and is much easier to conduct continuous maintenance. This book attempts to explore all you need to know regarding microservice architecture and patterns. It will assist you in making informed decisions, if you have plans to implement microservices architecture. What You'll Learn: Examine the

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characteristics, concepts, and culture that define microservice architectures. Discover how microservices can help you drive business objectives. Comprehend the challenges of scaling microservice architectures. Analyze the complexities of monitoring and testing distributed systems. Explore effective testing strategies for microservices. Secure microservices with Single Sign-On, API gateway, JWT and so on. Learn how to implement different microservice design patterns to facilitate scalability whilst maintaining consistency. And lots more

Microservices Security in Action

Microservices: Patterns and Applications Microservices are the next big thing in designing scalable, easy to maintain applications. This book will explain everything you need to know about Microservices to make your next project successful. You will learn: Microservice Patterns This book goes into great detail on all of the Microservice Architecture patterns including * Monolithic Architecture* Microservice Architecture* Service Discovery* Gateway / Proxy API* Orchestrated API* Service Registration* CQRS and Event Sourcing* Bulk Heads* Circuit Breaker* Message Broker The most important thing about Microservices is when and how to apply a pattern, along with explaining what choices you must make and why. Every system is different so it is vital to understand a lot of basics before designing and developing your own Microservices. From Monolithic to Microservice The basics here are how to decompose a Monolithic system into a Microservice and this book

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shows exactly how this process is completed. Service Oriented Architecture to Microservice A more common need is to migrate your system from a SOA based architecture to Microservices, there are many advantages and the process is not as straightforward as you would expect. New Microservices If you want to build a brand-new system and leverage the power of Microservices this book outlines the pitfalls, strategies and tactics needs to make this work for you. It is not as easy as it would seem and you will understand why after reading this book. Microservice Technologies You'll learn about what technologies you need to use and understand for successful Microservices. *Virtualization* Containers (Docker and Rocket) *Databases* Security (JSON Web Tokens) *Logging* Exceptions *Caching* Timeouts *Scalability (CAP, Cube) *Platform as a Service (PaaS) *Cloud architecture *Technology agnostic Why Microservices? Isn't this just the latest buzz word? While Microservices may be a recent trend and is gaining traction across the industry as a silver-bullet. It is not a silver-bullet. In this book you will learn important reasons why you cannot treat Microservices or any technology or technique as a silver-bullet. There are tradeoffs and advantages to every architectural decision, you will understand the details by reading this book. Most importantly you will understand how Microservices is what SOA had promised and never delivered. Author: Lucas Krause Lucas has been in the technology industry as a consultant, contractor, architect, engineer, and manager and understands and has used Microservices successfully to solve his client problems. Philosophy of Microservices You'll learn about what the philosophy of

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Microservices is and why this is important. It is critical to understand the philosophy as that is what makes Microservices work at so many other companies and solutions. If you are looking to gain an understanding of Microservices along with the patterns and application around the process to implementing them than, this is the book for you! Ready to learn about Microservices? Let's go! Want To Be brought up to speed on the latest innovations and techniques with Microservices? Want to Understand Why Microservices? What Makes Microservices so Special? What are the potential pitfalls? Why Are Microservices so popular? How do I make my projects successful?

Building Microservices

Apply microservices patterns to build resilient and scalable distributed systems Key Features Understand the challenges of building large-scale microservice landscapes Build cloud-native production-ready microservices with this comprehensive guide Discover how to get the best out of Spring Cloud, Kubernetes, and Istio when used together Book Description Microservices architecture allows developers to build and maintain applications with ease, and enterprises are rapidly adopting it to build software using Spring Boot as their default framework. With this book, you'll learn how to efficiently build and deploy microservices using Spring Boot. This microservices book will take you through tried and tested approaches to building distributed systems and implementing

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microservices architecture in your organization. Starting with a set of simple cooperating microservices developed using Spring Boot, you'll learn how you can add functionalities such as persistence, make your microservices reactive, and describe their APIs using Swagger/OpenAPI. As you advance, you'll understand how to add different services from Spring Cloud to your microservice system. The book also demonstrates how to deploy your microservices using Kubernetes and manage them with Istio for improved security and traffic management. Finally, you'll explore centralized log management using the EFK stack and monitor microservices using Prometheus and Grafana. By the end of this book, you'll be able to build microservices that are scalable and robust using Spring Boot and Spring Cloud. What you will learn

- Build reactive microservices using Spring Boot
- Develop resilient and scalable microservices using Spring Cloud
- Use OAuth 2.0/OIDC and Spring Security to protect public APIs
- Implement Docker to bridge the gap between development, testing, and production
- Deploy and manage microservices using Kubernetes
- Apply Istio for improved security, observability, and traffic management

Who this book is for This book is for Java and Spring developers and architects who want to learn how to break up their existing monoliths into microservices and deploy them either on-premises or in the cloud using Kubernetes as a container orchestrator and Istio as a service Mesh. No familiarity with microservices architecture is required to get started with this book.

Microservices for the Enterprise

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“For software developers of all experience levels looking to improve their results, and design and implement domain-driven enterprise applications consistently with the best current state of professional practice, Implementing Domain-Driven Design will impart a treasure trove of knowledge hard won within the DDD and enterprise application architecture communities over the last couple decades.”

–Randy Stafford, Architect At-Large, Oracle Coherence Product Development “This book is a must-read for anybody looking to put DDD into practice.” –Udi Dahan, Founder of NServiceBus Implementing Domain-Driven Design presents a top-down approach to understanding domain-driven design (DDD) in a way that fluently connects strategic patterns to fundamental tactical programming tools. Vaughn Vernon couples guided approaches to implementation with modern architectures, highlighting the importance and value of focusing on the business domain while balancing technical considerations. Building on Eric Evans’ seminal book, Domain-Driven Design, the author presents practical DDD techniques through examples from familiar domains. Each principle is backed up by realistic Java examples—all applicable to C# developers—and all content is tied together by a single case study: the delivery of a large-scale Scrum-based SaaS system for a multitenant environment. The author takes you far beyond “DDD-lite” approaches that embrace DDD solely as a technical toolset, and shows you how to fully leverage DDD’s “strategic design patterns” using Bounded Context, Context Maps, and the Ubiquitous Language. Using these techniques and examples, you can reduce time

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to market and improve quality, as you build software that is more flexible, more scalable, and more tightly aligned to business goals. Coverage includes Getting started the right way with DDD, so you can rapidly gain value from it Using DDD within diverse architectures, including Hexagonal, SOA, REST, CQRS, Event-Driven, and Fabric/Grid-Based Appropriately designing and applying Entities-and learning when to use Value Objects instead Mastering DDD's powerful new Domain Events technique Designing Repositories for ORM, NoSQL, and other databases

Spring 5 Design Patterns

Microservices architecture (MSA) is increasingly popular with software architects and engineers as it accelerates software solution design, development, and deployment in a risk-free manner. Placing a software system into a production environment is elegantly simplified and sped up with the use of MSA development platforms, runtime environments, acceleration engines, design patterns, integrated frameworks, and related tools. The MSA ecosystem is expanding with third-party products that automate as many tasks as possible. MSA is being positioned as the enterprise-grade and agile-application design method. This book covers in-depth the features and facilities that make up the MSA ecosystem. Beginning with an overview of Service-Oriented Architecture (SOA) that covers the Common Object Request Broker Architecture (CORBA), Distributed Component Object Model (DCOM), and Remote Method Invocation (RMI), the book explains the basic

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essentials of MSA and the continuous delivery of applications to customers. The book gives software developers insight into: Current and emerging communication models Key architectural elements of MSA-based applications Designing efficient APIs for microservices MSA middleware platforms such as REST, SOAP, Apache Thrift, and gRPC Microservice discovery and the API gateway Service orchestration and choreography for composing individual services to achieve a useful business process Database transactions in MSA-centric applications Design, composition, security, and deployment patterns MSA security Modernizing legacy applications The book concludes with a chapter on composing and building powerful microservices. With the exponential growth of IoT devices, microservices are being developed and deployed on resource-constrained but resource-intensive devices in order to provide people-centric applications. The book discusses the challenges of these applications. Finally, the book looks at the role of microservices in smart environments and upcoming trends including ubiquitous yet disappearing microservices.

Microservices Patterns Video Edition

"A comprehensive overview of the challenges teams face when moving to microservices, with industry-tested solutions to these problems." Tim Moore, Lightbend Microservices Patterns teaches enterprise developers and architects how to build applications with the microservice architecture. Rather than simply

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advocating for the use the microservice architecture, this clearly-written guide takes a balanced, pragmatic approach, exploring both the benefits and drawbacks. Successfully developing microservices-based applications requires mastering a new set of architectural insights and practices. In this unique book, microservice architecture pioneer and Java Champion Chris Richardson collects, catalogues, and explains 44 patterns that solve problems such as service decomposition, transaction management, querying, and inter-service communication.

Microservices Patterns teaches you how to develop and deploy production-quality microservices-based applications. This invaluable set of design patterns builds on decades of distributed system experience, adding new patterns for writing services and composing them into systems that scale and perform reliably under real-world conditions. More than just a patterns catalog, this practical guide offers experience-driven advice to help you design, implement, test, and deploy your microservices-based application. Inside: How (and why!) to use the microservice architecture
Service decomposition strategies
Transaction management and querying patterns
Effective testing strategies
Deployment patterns
This book/course is made for enterprise developers familiar with standard enterprise application architecture. Examples are in Java. Chris Richardson is a Java Champion, a JavaOne rock star, author of Manning's POJOs in Action , and creator of the original CloudFoundry.com. Pragmatic treatment of an important new architectural landscape. Simeon Leyzerzon, Excelsior Software
A solid compendium of information that will quicken your migration to this modern cloud-based

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architecture. John Guthrie, Dell/EMC How to understand the microservices approach, and how to use it in real life. Potito Coluccelli, Bizmatica Econocom
NARRATED BY AIDEN HUMPHREYS AND LOU FERNANDEZ.

Microservice Architecture

How do you detangle a monolithic system and migrate it to a microservice architecture? How do you do it while maintaining business-as-usual? As a companion to Sam Newman's extremely popular Building Microservices, this new book details a proven method for transitioning an existing monolithic system to a microservice architecture. With many illustrative examples, insightful migration patterns, and a bevy of practical advice to transition your monolith enterprise into a microservice operation, this practical guide covers multiple scenarios and strategies for a successful migration, from initial planning all the way through application and database decomposition. You'll learn several tried and tested patterns and techniques that you can use as you migrate your existing architecture. Ideal for organizations looking to transition to microservices, rather than rebuild Helps companies determine whether to migrate, when to migrate, and where to begin Addresses communication, integration, and the migration of legacy systems Discusses multiple migration patterns and where they apply Provides database migration examples, along with synchronization strategies Explores application decomposition, including several architectural refactoring patterns

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Delves into details of database decomposition, including the impact of breaking referential and transactional integrity, new failure modes, and more

Microservices Patterns

The way developers design, build, and run software has changed significantly with the evolution of microservices and containers. These modern architectures use new primitives that require a different set of practices than most developers, tech leads, and architects are accustomed to. With this focused guide, Bilgin Ibryam and Roland Huß from Red Hat provide common reusable elements, patterns, principles, and practices for designing and implementing cloud-native applications on Kubernetes. Each pattern includes a description of the problem and a proposed solution with Kubernetes specifics. Many patterns are also backed by concrete code examples. This book is ideal for developers already familiar with basic Kubernetes concepts who want to learn common cloud native patterns. You'll learn about the following pattern categories: Foundational patterns cover the core principles and practices for building container-based cloud-native applications. Behavioral patterns explore finer-grained concepts for managing various types of container and platform interactions. Structural patterns help you organize containers within a pod, the atom of the Kubernetes platform. Configuration patterns provide insight into how application configurations can be handled in Kubernetes. Advanced patterns covers more advanced topics such as extending

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the platform with operators.

The Art of Scalability

Microservices are small, but they offer big value. A microservice is a very small piece of a larger system that can be coded by one developer within one iteration. Microservices can be added and removed individually, new developers can be immediately productive, and legacy code is easily replaced. Developers are no longer hampered by the communication and coordination overhead caused by monolithic systems. Savvy businesses are discovering that software development productivity can be greatly enhanced with the right engineering approach that enables even junior developers to double their productivity, while reducing delivery risk. The Tao of Microservices presents readers with the path to understanding how to apply microservices architecture in their real- world projects. This high-level book offers a conceptual view of microservice architectures, along with core concepts and their application. It also includes a detailed case study for the nodezoo.com system, including all source code and documentation. By the end of the book, readers will have explored in depth the key ideas of the microservice architecture and will be able to design, analyze and implement systems based on this architecture. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

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Fowler

The practice of enterprise application development has benefited from the emergence of many new enabling technologies. Multi-tiered object-oriented platforms, such as Java and .NET, have become commonplace. These new tools and technologies are capable of building powerful applications, but they are not easily implemented. Common failures in enterprise applications often occur because their developers do not understand the architectural lessons that experienced object developers have learned. Patterns of Enterprise Application Architecture is written in direct response to the stiff challenges that face enterprise application developers. The author, noted object-oriented designer Martin Fowler, noticed that despite changes in technology--from Smalltalk to CORBA to Java to .NET--the same basic design ideas can be adapted and applied to solve common problems. With the help of an expert group of contributors, Martin distills over forty recurring solutions into patterns. The result is an indispensable handbook of solutions that are applicable to any enterprise application platform. This book is actually two books in one. The first section is a short tutorial on developing enterprise applications, which you can read from start to finish to understand the scope of the book's lessons. The next section, the bulk of the book, is a detailed reference to the patterns themselves. Each pattern provides usage and implementation information, as well as detailed code examples in Java or C#. The entire book is also richly illustrated with UML diagrams to further explain the

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concepts. Armed with this book, you will have the knowledge necessary to make important architectural decisions about building an enterprise application and the proven patterns for use when building them. The topics covered include

- Dividing an enterprise application into layers
- The major approaches to organizing business logic
- An in-depth treatment of mapping between objects and relational databases
- Using Model-View-Controller to organize a Web presentation
- Handling concurrency for data that spans multiple transactions
- Designing distributed object interfaces

Microservices: Patterns and Applications

Distributed systems have become more fine-grained in the past 10 years, shifting from code-heavy monolithic applications to smaller, self-contained microservices. But developing these systems brings its own set of headaches. With lots of examples and practical advice, this book takes a holistic view of the topics that system architects and administrators must consider when building, managing, and evolving microservice architectures. Microservice technologies are moving quickly. Author Sam Newman provides you with a firm grounding in the concepts while diving into current solutions for modeling, integrating, testing, deploying, and monitoring your own autonomous services. You'll follow a fictional company throughout the book to learn how building a microservice architecture affects a single domain. Discover how microservices allow you to align your system design

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with your organization's goals Learn options for integrating a service with the rest of your system Take an incremental approach when splitting monolithic codebases Deploy individual microservices through continuous integration Examine the complexities of testing and monitoring distributed services Manage security with user-to-service and service-to-service models Understand the challenges of scaling microservice architectures

The Tao of Microservices

Summary Cloud Native Patterns is your guide to developing strong applications that thrive in the dynamic, distributed, virtual world of the cloud. This book presents a mental model for cloud-native applications, along with the patterns, practices, and tooling that set them apart. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Cloud platforms promise the holy grail: near-zero downtime, infinite scalability, short feedback cycles, fault-tolerance, and cost control. But how do you get there? By applying cloudnative designs, developers can build resilient, easily adaptable, web-scale distributed applications that handle massive user traffic and data loads. Learn these fundamental patterns and practices, and you'll be ready to thrive in the dynamic, distributed, virtual world of the cloud. About the Book With 25 years of experience under her belt, Cornelia Davis teaches you the practices and patterns that set cloud-native applications apart. With realistic examples and

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expert advice for working with apps, data, services, routing, and more, she shows you how to design and build software that functions beautifully on modern cloud platforms. As you read, you will start to appreciate that cloud-native computing is more about the how and why rather than the where. What's inside

The lifecycle of cloud-native apps
Cloud-scale configuration management
Zero downtime upgrades, versioned services, and parallel deploys
Service discovery and dynamic routing
Managing interactions between services, including retries and circuit breakers

About the Reader
Requires basic software design skills and an ability to read Java or a similar language.

About the Author
Cornelia Davis is Vice President of Technology at Pivotal Software. A teacher at heart, she's spent the last 25 years making good software and great software developers.

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Microservices and Containers

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Build maintainable websites with elegant Django design patterns and modern best practices Key Features Explore aspects of Django from Models and Views to testing and deployment Understand the nuances of web development such as browser attack and data design Walk through various asynchronous tools such as Celery and Channels Book Description Building secure and maintainable web applications requires comprehensive knowledge. The second edition of this book not only sheds light on Django, but also encapsulates years of experience in the form of design patterns and best practices. Rather than sticking to GoF design patterns, the book looks at higher-level patterns. Using the latest version of Django and Python, you'll learn about Channels and asyncio while building a solid conceptual background. The book compares design choices to help you make everyday decisions faster in a rapidly changing environment. You'll first learn about various architectural patterns, many of which are used to build Django. You'll start with building a fun superhero project by gathering the requirements, creating mockups, and setting up the project. Through project-guided examples, you'll explore the Model, View, templates, workflows, and code reusability techniques. In addition to this, you'll learn practical Python coding techniques in Django that'll enable you to tackle problems related to complex topics such as legacy coding, data modeling, and code reusability. You'll discover API design principles and best practices, and understand the need for asynchronous workflows. During this journey, you'll study popular Python code testing techniques in Django, various web security threats

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and their countermeasures, and the monitoring and performance of your application. What you will learn Make use of common design patterns to help you write better code Implement best practices and idioms in this rapidly evolving framework Deal with legacy code and debugging Use asynchronous tools such as Celery, Channels, and asyncio Use patterns while designing API interfaces with the Django REST Framework Reduce the maintenance burden with well-tested, cleaner code Host, deploy, and secure your Django projects Who this book is for This book is for you whether you're new to Django or just want to learn its best practices. You do not have to be an expert in Django or Python. No prior knowledge of patterns is expected for reading this book but it would be helpful.

POJOs in Action

As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of

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the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design's distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query responsibility segregation (CQRS) Event-driven architecture and reactive microservices

Enterprise Integration Patterns

Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense of all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively Make informed decisions by identifying the strengths and weaknesses

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of different tools Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity Understand the distributed systems research upon which modern databases are built Peek behind the scenes of major online services, and learn from their architectures

Building Microservices Applications on Microsoft Azure

Summary Microservices in Action is a practical book about building and deploying microservice-based applications. Written for developers and architects with a solid grasp of service-oriented development, it tackles the challenge of putting microservices into production. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Invest your time in designing great applications, improving infrastructure, and making the most out of your dev teams. Microservices are easier to write, scale, and maintain than traditional enterprise applications because they're built as a system of independent components. Master a few important new patterns and processes, and you'll be ready to develop, deploy, and run production-quality microservices. About the Book Microservices in Action teaches you how to write and maintain microservice-based applications. Created with day-to-day development in mind, this informative guide immerses you in real-world use cases from design to deployment. You'll discover how microservices enable an efficient continuous delivery pipeline, and explore examples using Kubernetes, Docker, and

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Google Container Engine. What's inside An overview of microservice architecture Building a delivery pipeline Best practices for designing multi-service transactions and queries Deploying with containers Monitoring your microservices About the Reader Written for intermediate developers familiar with enterprise architecture and cloud platforms like AWS and GCP. About the Author Morgan Bruce and Paulo A. Pereira are experienced engineering leaders. They work daily with microservices in a production environment, using the techniques detailed in this book. Table of Contents PART 1 - The lay of the land Designing and running microservices Microservices at SimpleBank PART 2 - Design Architecture of a microservice application Designing new features Transactions and queries in microservices Designing reliable services Building a reusable microservice framework PART 3 - Deployment Deploying microservices Deployment with containers and schedulers Building a delivery pipeline for microservices PART 4 - Observability and ownership Building a monitoring system Using logs and traces to understand behavior Building microservice teams

Cloud Native Patterns

Learn and use the design patterns and best practices in Spring to solve common design problems and build user-friendly microservices Key Features Study the benefits of using the right design pattern in your toolkit Manage your code easily with Spring's dependency injection pattern Explore the features of Docker and

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Mesos to build successful microservices Book Description Getting Started with Spring Microservices begins with an overview of the Spring Framework 5.0, its design patterns, and its guidelines that enable you to implement responsive microservices at scale. You will learn how to use GoF patterns in application design. You will understand the dependency injection pattern, which is the main principle behind the decoupling process of the Spring Framework and makes it easier to manage your code. Then, you will learn how to use proxy patterns in aspect-oriented programming and remoting. Moving on, you will understand the JDBC template patterns and their use in abstracting database access. After understanding the basics, you will move on to more advanced topics, such as reactive streams and concurrency. Written to the latest specifications of Spring that focuses on Reactive Programming, the Learning Path teaches you how to build modern, internet-scale Java applications in no time. Next, you will understand how Spring Boot is used to deploying serverless autonomous services by removing the need to have a heavyweight application server. You'll also explore ways to deploy your microservices to Docker and managing them with Mesos. By the end of this Learning Path, you will have the clarity and confidence for implementing microservices using Spring Framework. This Learning Path includes content from the following Packt products: Spring 5 Microservices by Rajesh R V Spring 5 Design Patterns by Dinesh Rajput What you will learn Develop applications using dependency injection patterns Build web applications using traditional Spring MVC patterns Utilize the reactive programming pattern to build reactive web apps Learn

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concurrency and handle multiple connections inside a web server Use Spring Boot and Spring Cloud to develop microservices Leverage reactive programming to build cloud-native applications Who this book is for Getting Started with Spring Microservices is ideal for Spring developers who want to use design patterns to solve common design problems and build cloud-ready, Internet-scale applications, and simple RESTful services.

Essentials of Microservices Architecture

Transition to Microservices and DevOps to Transform Your Software Development Effectiveness Thanks to the tech sector's latest game-changing innovations—the Internet of Things (IoT), software-enabled networking, and software as a service (SaaS), to name a few—there is now a seemingly insatiable demand for platforms and architectures that can improve the process of application development and deployment. In *Microservices and Containers*, longtime systems architect and engineering team leader Parminder Kocher analyzes two of the hottest new technology trends: microservices and containers. Together, as Kocher demonstrates, microservices and Docker containers can bring unprecedented agility and scalability to application development and deployment, especially in large, complex projects where speed is crucial but small errors can be disastrous. Learn how to leverage microservices and Docker to drive modular architectural design, on-demand scalability, application performance and reliability, time-to-

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market, code reuse, and exponential improvements in DevOps effectiveness. Kocher offers detailed guidance and a complete roadmap for transitioning from monolithic architectures, as well as an in-depth case study that walks the reader through the migration of an enterprise-class SOA system. Understand how microservices enable you to organize applications into standalone components that are easier to manage, update, and scale Decide whether microservices and containers are worth your investment, and manage the organizational learning curve associated with them Apply best practices for interprocess communication among microservices Migrate monolithic systems in an orderly fashion Understand Docker containers, installation, and interfaces Network, orchestrate, and manage Docker containers effectively Use Docker to maximize scalability in microservices-based applications Apply your learning with an in-depth, hands-on case study Whether you are a software architect/developer or systems professional looking to move on from older approaches or a manager trying to maximize the business value of these technologies, *Microservices and Containers* will be an invaluable addition to your library. Register your product at informit.com/register for convenient access to downloads, updates, and/or corrections as they become available.

Building Microservices with Spring

Kubernetes Patterns

Enterprise Integration Patterns provides an invaluable catalog of sixty-five patterns, with real-world solutions that demonstrate the formidable of messaging and help you to design effective messaging solutions for your enterprise. The authors also include examples covering a variety of different integration technologies, such as JMS, MSMQ, TIBCO ActiveEnterprise, Microsoft BizTalk, SOAP, and XSL. A case study describing a bond trading system illustrates the patterns in practice, and the book offers a look at emerging standards, as well as insights into what the future of enterprise integration might hold. This book provides a consistent vocabulary and visual notation framework to describe large-scale integration solutions across many technologies. It also explores in detail the advantages and limitations of asynchronous messaging architectures. The authors present practical advice on designing code that connects an application to a messaging system, and provide extensive information to help you determine when to send a message, how to route it to the proper destination, and how to monitor the health of a messaging system. If you want to know how to manage, monitor, and maintain a messaging system once it is in use, get this book.

Implementing Domain-Driven Design

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The Most Complete, Practical, and Actionable Guide to Microservices Going beyond mere theory and marketing hype, Eberhard Wolff presents all the knowledge you need to capture the full benefits of this emerging paradigm. He illuminates microservice concepts, architectures, and scenarios from a technology-neutral standpoint, and demonstrates how to implement them with today's leading technologies such as Docker, Java, Spring Boot, the Netflix stack, and Spring Cloud. The author fully explains the benefits and tradeoffs associated with microservices, and guides you through the entire project lifecycle: development, testing, deployment, operations, and more. You'll find best practices for architecting microservice-based systems, individual microservices, and nanoservices, each illuminated with pragmatic examples. The author supplements opinions based on his experience with concise essays from other experts, enriching your understanding and illuminating areas where experts disagree. Readers are challenged to experiment on their own the concepts explained in the book to gain hands-on experience. Discover what microservices are, and how they differ from other forms of modularization Modernize legacy applications and efficiently build new systems Drive more value from continuous delivery with microservices Learn how microservices differ from SOA Optimize the microservices project lifecycle Plan, visualize, manage, and evolve architecture Integrate and communicate among microservices Apply advanced architectural techniques, including CQRS and Event Sourcing Maximize resilience and stability Operate and monitor microservices in production Build a full implementation with Docker, Java, Spring

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Boot, the Netflix stack, and Spring Cloud Explore nanoservices with Amazon Lambda, OSGi, Java EE, Vert.x, Erlang, and Seneca Understand microservices' impact on teams, technical leaders, product owners, and stakeholders Managers will discover better ways to support microservices, and learn how adopting the method affects the entire organization. Developers will master the technical skills and concepts they need to be effective. Architects will gain a deep understanding of key issues in creating or migrating toward microservices, and exactly what it will take to transform their plans into reality.

Microservices in Action

Browser-based software can quickly become complex and difficult to maintain, especially when it's implemented as a large single-page application. By adopting the micro frontends approach and designing your web apps as systems of features, you can deliver faster feature development, easier upgrades, and pick and choose the technology you use in your stack. Micro Frontends in Action is your guide to simplifying unwieldy frontends by composing them from small, well-defined units. Summary Browser-based software can quickly become complex and difficult to maintain, especially when it's implemented as a large single-page application. By adopting the micro frontends approach and designing your web apps as systems of features, you can deliver faster feature development, easier upgrades, and pick and choose the technology you use in your stack. Micro Frontends in Action is your

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guide to simplifying unwieldy frontends by composing them from small, well-defined units. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Micro frontends deliver the same flexibility and maintainability to browser-based applications that microservices provide for backend systems. You design your project as a set of standalone components that include their own interfaces, logic, and storage. Then you develop these mini-applications independently and compose them in the browser. About the Book Micro Frontends in Action teaches you to apply the microservices approach to the frontend. You'll start with the core micro frontend design ideas. Then, you'll build an e-commerce application, working through practical issues like server-side and client-side composition, routing, and maintaining a consistent look and feel. Finally, you'll explore team workflow patterns that maximize the benefit of developing application components independently. What's Inside - Create a unified frontend from independent applications - Combine JavaScript code from multiple frameworks - Browser and server-side composition and routing - Implement effective dev teams and project workflow About the Reader For web developers, software architects, and team leaders. About the Author Michael Geers is a software developer specializing in building user interfaces. Table of Contents PART 1 - GETTING STARTED WITH MICRO FRONTENDS 1 What are micro frontends? 2 My first micro frontends project PART 2 - ROUTING, COMPOSITION, AND COMMUNICATION 3 Composition with Ajax and server-side routing 4 Server-side composition 5 Client-side composition 6

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Communication patterns 7 Client-side routing and the application shell 8 Composition and universal rendering 9 Which architecture fits my project? PART 3 - HOW TO BE FAST, CONSISTENT, AND EFFECTIVE 10 Asset loading 11 Performance is key 12 User interface and design system 13 Teams and boundaries 14 Migration, local development, and testing

TypeScript Microservices

Summary Microservices Patterns teaches enterprise developers and architects how to build applications with the microservice architecture. Rather than simply advocating for the use the microservice architecture, this clearly-written guide takes a balanced, pragmatic approach, exploring both the benefits and drawbacks. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Successfully developing microservices-based applications requires mastering a new set of architectural insights and practices. In this unique book, microservice architecture pioneer and Java Champion Chris Richardson collects, catalogues, and explains 44 patterns that solve problems such as service decomposition, transaction management, querying, and inter-service communication. About the Book Microservices Patterns teaches you how to develop and deploy production-quality microservices-based applications. This invaluable set of design patterns builds on decades of distributed system experience, adding new patterns for writing services and composing them

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into systems that scale and perform reliably under real-world conditions. More than just a patterns catalog, this practical guide offers experience-driven advice to help you design, implement, test, and deploy your microservices-based application. What's inside How (and why!) to use the microservice architecture Service decomposition strategies Transaction management and querying patterns Effective testing strategies Deployment patterns including containers and serverless About the Reader Written for enterprise developers familiar with standard enterprise application architecture. Examples are in Java. About the Author Chris Richardson is a Java Champion, a JavaOne rock star, author of Manning's POJOs in Action, and creator of the original CloudFoundry.com. Table of Contents Escaping monolithic hell Decomposition strategies Interprocess communication in a microservice architecture Managing transactions with sagas Designing business logic in a microservice architecture Developing business logic with event sourcing Implementing queries in a microservice architecture External API patterns Testing microservices: part 1 Testing microservices: part 2 Developing production-ready services Deploying microservices Refactoring to microservices

Microservices Patterns

The Comprehensive, Proven Approach to IT Scalability—Updated with New Strategies, Technologies, and Case Studies In The Art of Scalability, Second Edition, leading scalability consultants Martin L. Abbott and Michael T. Fisher cover

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everything you need to know to smoothly scale products and services for any requirement. This extensively revised edition reflects new technologies, strategies, and lessons, as well as new case studies from the authors' pioneering consulting practice, AKF Partners. Writing for technical and nontechnical decision-makers, Abbott and Fisher cover everything that impacts scalability, including architecture, process, people, organization, and technology. Their insights and recommendations reflect more than thirty years of experience at companies ranging from eBay to Visa, and Salesforce.com to Apple. You'll find updated strategies for structuring organizations to maximize agility and scalability, as well as new insights into the cloud (IaaS/PaaS) transition, NoSQL, DevOps, business metrics, and more. Using this guide's tools and advice, you can systematically clear away obstacles to scalability—and achieve unprecedented IT and business performance. Coverage includes

- Why scalability problems start with organizations and people, not technology, and what to do about it
- Actionable lessons from real successes and failures
- Staffing, structuring, and leading the agile, scalable organization
- Scaling processes for hyper-growth environments
- Architecting scalability: proprietary models for clarifying needs and making choices—including 15 key success principles
- Emerging technologies and challenges: data cost, datacenter planning, cloud evolution, and customer-aligned monitoring
- Measuring availability, capacity, load, and performance

Building Microservices with Go

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Explore the concepts and tools you need to discover the world of microservices with various design patterns Key Features Get to grips with the microservice architecture and build enterprise-ready microservice applications Learn design patterns and the best practices while building a microservice application Obtain hands-on techniques and tools to create high-performing microservices resilient to possible fails Book Description Microservices are a hot trend in the development world right now. Many enterprises have adopted this approach to achieve agility and the continuous delivery of applications to gain a competitive advantage. This book will take you through different design patterns at different stages of the microservice application development along with their best practices. Microservice Patterns and Best Practices starts with the learning of microservices key concepts and showing how to make the right choices while designing microservices. You will then move onto internal microservices application patterns, such as caching strategy, asynchronism, CQRS and event sourcing, circuit breaker, and bulkheads. As you progress, you'll learn the design patterns of microservices. The book will guide you on where to use the perfect design pattern at the application development stage and how to break monolithic application into microservices. You will also be taken through the best practices and patterns involved while testing, securing, and deploying your microservice application. At the end of the book, you will easily be able to create interoperable microservices, which are testable and prepared for optimum performance. What you will learn How to break

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monolithic application into microservices Implement caching strategies, CQRS and event sourcing, and circuit breaker patterns Incorporate different microservice design patterns, such as shared data, aggregator, proxy, and chained Utilize consolidate testing patterns such as integration, signature, and monkey tests Secure microservices with JWT, API gateway, and single sign on Deploy microservices with continuous integration or delivery, Blue-Green deployment Who this book is for This book is for architects and senior developers who would like implement microservice design patterns in their enterprise application development. The book assumes some prior programming knowledge.

Micro Frontends in Action

Learn various design patterns and best practices in Spring 5 and use them to solve common design problems. About This Book Explore best practices for designing an application Manage your code easily with Spring's Dependency Injection pattern Understand the benefits that the right design patterns can offer your toolkit Who This Book Is For This book is for developers who would like to use design patterns to address common problems while designing an app using the Spring Framework and Reactive Programming approach. A basic knowledge of the Spring Framework and Java is assumed. What You Will Learn Develop applications using dependency injection patterns Learn best practices to design enterprise applications Explore Aspect-Oriented Programming relating to transactions, security, and caching. Build

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web applications using traditional Spring MVC patterns Learn to configure Spring using XML, annotations, and Java. Implement caching to improve application performance. Understand concurrency and handle multiple connections inside a web server. Utilizing Reactive Programming Pattern to build Reactive web applications. In Detail Design patterns help speed up the development process by offering well tested and proven solutions to common problems. These patterns coupled with the Spring framework offer tremendous improvements in the development process. The book begins with an overview of Spring Framework 5.0 and design patterns. You will understand the Dependency Injection pattern, which is the main principle behind the decoupling process that Spring performs, thus making it easier to manage your code. You will learn how GoF patterns can be used in Application Design. You will then learn to use Proxy patterns in Aspect Oriented Programming and remoting. Moving on, you will understand the JDBC template patterns and their use in abstracting database access. Then, you will be introduced to MVC patterns to build Reactive web applications. Finally, you will move on to more advanced topics such as Reactive streams and Concurrency. At the end of this book, you will be well equipped to develop efficient enterprise applications using Spring 5 with common design patterns Style and approach The book takes a pragmatic approach, showing various design patterns and best-practice considerations, including the Reactive programming approach with the Spring 5 Framework and ways to solve common development and design problems for enterprise applications.

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Microservices

Microservices can have a positive impact on your enterprise—just ask Amazon and Netflix—but you can fall into many traps if you don't approach them in the right way. This practical guide covers the entire microservices landscape, including the principles, technologies, and methodologies of this unique, modular style of system building. You'll learn about the experiences of organizations around the globe that have successfully adopted microservices. In three parts, this book explains how these services work and what it means to build an application the Microservices Way. You'll explore a design-based approach to microservice architecture with guidance for implementing various elements. And you'll get a set of recipes and practices for meeting practical, organizational, and cultural challenges to microservice adoption. Learn how microservices can help you drive business objectives

Examine the principles, practices, and culture that define microservice architectures

Explore a model for creating complex systems and a design process for building a microservice architecture

Learn the fundamental design concepts for individual microservices

Delve into the operational elements of a microservices architecture, including containers and service discovery

Discover how to handle the challenges of introducing microservice architecture in your organization

Microservices from Theory to Practice: Creating Applications in

IBM Bluemix Using the Microservices Approach

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

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complexities introduced by microservices Who This Book Is For Architects and consultants who work on Microsoft Azure and manage large-scale deployments.

Spring Microservices in Action

Your one-stop guide to the common patterns and practices, showing you how to apply these using the Go programming language About This Book This short, concise, and practical guide is packed with real-world examples of building microservices with Go It is easy to read and will benefit smaller teams who want to extend the functionality of their existing systems Using this practical approach will save your money in terms of maintaining a monolithic architecture and demonstrate capabilities in ease of use Who This Book Is For You should have a working knowledge of programming in Go, including writing and compiling basic applications. However, no knowledge of RESTful architecture, microservices, or web services is expected. If you are looking to apply techniques to your own projects, taking your first steps into microservice architecture, this book is for you. What You Will Learn Plan a microservice architecture and design a microservice Write a microservice with a RESTful API and a database Understand the common idioms and common patterns in microservices architecture Leverage tools and automation that helps microservices become horizontally scalable Get a grounding in containerization with Docker and Docker-Compose, which will greatly accelerate your development lifecycle Manage and secure Microservices at scale with

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monitoring, logging, service discovery, and automation Test microservices and integrate API tests in Go In Detail Microservice architecture is sweeping the world as the de facto pattern to build web-based applications. Golang is a language particularly well suited to building them. Its strong community, encouragement of idiomatic style, and statically-linked binary artifacts make integrating it with other technologies and managing microservices at scale consistent and intuitive. This book will teach you the common patterns and practices, showing you how to apply these using the Go programming language. It will teach you the fundamental concepts of architectural design and RESTful communication, and show you patterns that provide manageable code that is supportable in development and at scale in production. We will provide you with examples on how to put these concepts and patterns into practice with Go. Whether you are planning a new application or working in an existing monolith, this book will explain and illustrate with practical examples how teams of all sizes can start solving problems with microservices. It will help you understand Docker and Docker-Compose and how it can be used to isolate microservice dependencies and build environments. We finish off by showing you various techniques to monitor, test, and secure your microservices. By the end, you will know the benefits of system resilience of a microservice and the advantages of Go stack. Style and approach The step-by-step tutorial focuses on building microservices. Each chapter expands upon the previous one, teaching you the main skills and techniques required to be a successful microservice practitioner.

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Microservices with Azure

Microservices is an architectural style in which large, complex software applications are composed of one or more smaller services. Each of these microservices focuses on completing one task that represents a small business capability. These microservices can be developed in any programming language. They communicate with each other using language-neutral protocols, such as Representational State Transfer (REST), or messaging applications, such as IBM® MQ Light. This IBM Redbooks® publication gives a broad understanding of this increasingly popular architectural style, and provides some real-life examples of how you can develop applications using the microservices approach with IBM Bluemix™. The source code for all of these sample scenarios can be found on GitHub (<https://github.com/>). The book also presents some case studies from IBM products. We explain the architectural decisions made, our experiences, and lessons learned when redesigning these products using the microservices approach. Information technology (IT) professionals interested in learning about microservices and how to develop or redesign an application in Bluemix using microservices can benefit from this book.

Django Design Patterns and Best Practices

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Summary Spring Microservices in Action teaches you how to build microservice-based applications using Java and the Spring platform. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Microservices break up your code into small, distributed, and independent services that require careful forethought and design. Fortunately, Spring Boot and Spring Cloud simplify your microservice applications, just as the Spring Framework simplifies enterprise Java development. Spring Boot removes the boilerplate code involved with writing a REST-based service. Spring Cloud provides a suite of tools for the discovery, routing, and deployment of microservices to the enterprise and the cloud. About the Book Spring Microservices in Action teaches you how to build microservice-based applications using Java and the Spring platform. You'll learn to do microservice design as you build and deploy your first Spring Cloud application. Throughout the book, carefully selected real-life examples expose microservice-based patterns for configuring, routing, scaling, and deploying your services. You'll see how Spring's intuitive tooling can help augment and refactor existing applications with micro services. What's Inside Core microservice design principles Managing configuration with Spring Cloud Config Client-side resiliency with Spring, Hystrix, and Ribbon Intelligent routing using Netflix Zuul Deploying Spring Cloud applications About the Reader This book is written for developers with Java and Spring experience. About the Author John Carnell is a senior cloud engineer with twenty years of experience in Java. Table of contents Welcome to the cloud, Spring Building microservices with Spring Boot

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Controlling your configuration with Spring Cloud configuration server On service discovery When bad things happen: client resiliency patterns with Spring Cloud and Netflix Hystrix Service routing with Spring Cloud and Zuul Securing your microservices Event-driven architecture with Spring Cloud Stream Distributed tracing with Spring Cloud Sleuth and Zipkin Deploying your microservices

Designing Data-Intensive Applications

The standard platform for enterprise application development has been EJB but the difficulties of working with it caused it to become unpopular. They also gave rise to lightweight technologies such as Hibernate, Spring, JDO, iBATIS and others, all of which allow the developer to work directly with the simpler POJOs. Now EJB version 3 solves the problems that gave EJB 2 a black eye-it too works with POJOs. POJOs in Action describes the new, easier ways to develop enterprise Java applications. It describes how to make key design decisions when developing business logic using POJOs, including how to organize and encapsulate the business logic, access the database, manage transactions, and handle database concurrency. This book is a new-generation Java applications guide: it enables readers to successfully build lightweight applications that are easier to develop, test, and maintain.

Service Design Patterns

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Microservices Security in Action teaches you how to address microservices-specific security challenges throughout the system. This practical guide includes plentiful hands-on exercises using industry-leading open-source tools and examples using Java and Spring Boot. Summary Unlike traditional enterprise applications, Microservices applications are collections of independent components that function as a system. Securing the messages, queues, and API endpoints requires new approaches to security both in the infrastructure and the code. Microservices Security in Action teaches you how to address microservices-specific security challenges throughout the system. This practical guide includes plentiful hands-on exercises using industry-leading open-source tools and examples using Java and Spring Boot. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Integrating independent services into a single system presents special security challenges in a microservices deployment. With proper planning, however, you can build in security from the start. Learn to create secure services and protect application data throughout development and deployment. As microservices continue to change enterprise application systems, developers and architects must learn to integrate security into their design and implementation. Because microservices are created as a system of independent components, each a possible point of failure, they can multiply the security risk. With proper planning, design, and implementation, you can reap the benefits of microservices while keeping your application data—and your company's reputation—safe! About the book

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Microservices Security in Action is filled with solutions, teaching best practices for throttling and monitoring, access control, and microservice-to-microservice communications. Detailed code samples, exercises, and real-world use cases help you put what you've learned into production. Along the way, authors and software security experts Prabath Siriwardena and Nuwan Dias shine a light on important concepts like throttling, analytics gathering, access control at the API gateway, and microservice-to-microservice communication. You'll also discover how to securely deploy microservices using state-of-the-art technologies including Kubernetes, Docker, and the Istio service mesh. Lots of hands-on exercises secure your learning as you go, and this straightforward guide wraps up with a security process review and best practices. When you're finished reading, you'll be planning, designing, and implementing microservices applications with the priceless confidence that comes with knowing they're secure!

What's inside

- Microservice security concepts
- Edge services with an API gateway
- Deployments with Docker, Kubernetes, and Istio
- Security testing at the code level
- Communications with HTTP, gRPC, and Kafka

About the reader

For experienced microservices developers with intermediate Java skills.

About the author

Prabath Siriwardena is the vice president of security architecture at WSO2. Nuwan Dias is the director of API architecture at WSO2. They have designed secure systems for many Fortune 500 companies.

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Hands-On Microservices with Spring Boot and Spring Cloud

In the race to compete in today's fast-moving markets, large enterprises are busy adopting new technologies for creating new products, processes, and business models. But one obstacle on the road to digital transformation is placing too much emphasis on technology, and not enough on the types of processes technology enables. What if different lines of business could build their own services and applications—and decision-making was distributed rather than centralized? This report explores the concept of a digital business platform as a way of empowering individual business sectors to act on data in real time. Much innovation in a digital enterprise will increasingly happen at the edge, whether it involves business users (from marketers to data scientists) or IoT devices. To facilitate the process, your core IT team can provide these sectors with the digital tools they need to innovate quickly. This report explores: Key cultural and organizational changes for

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developing business capabilities through cross-functional product teams A platform for integrating applications, data sources, business partners, clients, mobile apps, social networks, and IoT devices Creating internal API programs for building innovative edge services in low-code or no-code environments Tools including Integration Platform as a Service, Application Platform as a Service, and Integration Software as a Service The challenge of integrating microservices and serverless architectures Event-driven architectures for processing and reacting to events in real time You'll also learn about a complete pervasive integration solution as a core component of a digital business platform to serve every audience in your organization.

Monolith to Microservices

Build robust microservice-based applications that are distributed, fault tolerant, and always available Key Features Learn to build message-driven services for effective communication Design microservices API using Reactive programming design patterns Deploy, scale and monitor microservices for consistent high performance Book Description In the last few years or so, microservices have achieved the rock star status and right now are one of the most tangible solutions in enterprises to make quick, effective, and scalable applications. The apparent rise of Typescript and long evolution from ES5 to ES6 has seen lots of big companies move to ES6 stack. If you want to learn how to leverage the power of

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microservices to build robust architecture using reactive programming and Typescript in Node.js, then this book is for you. Typescript Microservices is an end-to-end guide that shows you the implementation of microservices from scratch; right from starting the project to hardening and securing your services. We will begin with a brief introduction to microservices before learning to break your monolith applications into microservices. From here, you will learn reactive programming patterns and how to build APIs for microservices. The next set of topics will take you through the microservice architecture with TypeScript and communication between services. Further, you will learn to test and deploy your TypeScript microservices using the latest tools and implement continuous integration. Finally, you will learn to secure and harden your microservice. By the end of the book, you will be able to build production-ready, scalable, and maintainable microservices using Node.js and Typescript. What you will learn Get acquainted with the fundamentals behind microservices. Explore the behavioral changes needed for moving from monolithic to microservices. Dive into reactive programming, Typescript and Node.js to learn its fundamentals in microservices Understand and design a service gateway and service registry for your microservices. Maintain the state of microservice and handle dependencies. Perfect your microservice with unit testing and Integration testing Develop a microservice, secure it, deploy it, and then scale it Who this book is for This book is for JavaScript developers seeking to utilize their Node.js and Typescript skills to build microservices and move away from the monolithic architecture. Prior

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knowledge of TypeScript and Node.js is assumed.

Microservice Patterns and Best Practices

Learn the importance of architectural and design patterns in producing and sustaining next-generation IT and business-critical applications with this guide. Key Features Use patterns to tackle communication, integration, application structure, and more Implement modern design patterns such as microservices to build resilient and highly available applications Choose between the MVP, MVC, and MVVM patterns depending on the application being built Book Description Enterprise Architecture (EA) is typically an aggregate of the business, application, data, and infrastructure architectures of any forward-looking enterprise. Due to constant changes and rising complexities in the business and technology landscapes, producing sophisticated architectures is on the rise. Architectural patterns are gaining a lot of attention these days. The book is divided in three modules. You'll learn about the patterns associated with object-oriented, component-based, client-server, and cloud architectures. The second module covers Enterprise Application Integration (EAI) patterns and how they are architected using various tools and patterns. You will come across patterns for Service-Oriented Architecture (SOA), Event-Driven Architecture (EDA), Resource-Oriented Architecture (ROA), big data analytics architecture, and Microservices Architecture (MSA). The final module talks about advanced topics such as Docker

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containers, high performance, and reliable application architectures. The key takeaways include understanding what architectures are, why they're used, and how and where architecture, design, and integration patterns are being leveraged to build better and bigger systems. What you will learn Understand how several architectural and design patterns work to systematically develop multitier web, mobile, embedded, and cloud applications Learn object-oriented and component-based software engineering principles and patterns Explore the frameworks corresponding to various architectural patterns Implement domain-driven, test-driven, and behavior-driven methodologies Deploy key platforms and tools effectively to enable EA design and solutioning Implement various patterns designed for the cloud paradigm Who this book is for This book will empower and enrich IT architects (such as enterprise architects, software product architects, and solution and system architects), technical consultants, evangelists, and experts.

Designing Distributed Systems

Get the deep insights you need to master efficient architectural design considerations and solve common design problems in your enterprise applications. Key Features The benefits and applicability of using different design patterns in JAVA EE Learn best practices to solve common design and architectural challenges Choose the right patterns to improve the efficiency of your programs Book Description Patterns are essential design tools for Java developers. Java EE Design

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Patterns and Best Practices helps developers attain better code quality and progress to higher levels of architectural creativity by examining the purpose of each available pattern and demonstrating its implementation with various code examples. This book will take you through a number of patterns and their Java EE-specific implementations. In the beginning, you will learn the foundation for, and importance of, design patterns in Java EE, and then will move on to implement various patterns on the presentation tier, business tier, and integration tier. Further, you will explore the patterns involved in Aspect-Oriented Programming (AOP) and take a closer look at reactive patterns. Moving on, you will be introduced to modern architectural patterns involved in composing microservices and cloud-native applications. You will get acquainted with security patterns and operational patterns involved in scaling and monitoring, along with some patterns involved in deployment. By the end of the book, you will be able to efficiently address common problems faced when developing applications and will be comfortable working on scalable and maintainable projects of any size. What you will learn

- Implement presentation layers, such as the front controller pattern
- Understand the business tier and implement the business delegate pattern
- Master the implementation of AOP
- Get involved with asynchronous EJB methods and REST services
- Involve key patterns in the adoption of microservices architecture
- Manage performance and scalability for enterprise-level applications

Who this book is for Java developers who are comfortable with programming in Java and now want to learn how to implement design patterns to create robust, reusable and easily maintainable

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apps.

Java EE 8 Design Patterns and Best Practices

Understand the key challenges and solutions around building microservices in the enterprise application environment. This book provides a comprehensive understanding of microservices architectural principles and how to use microservices in real-world scenarios. Architectural challenges using microservices with service integration and API management are presented and you learn how to eliminate the use of centralized integration products such as the enterprise service bus (ESB) through the use of composite/integration microservices. Concepts in the book are supported with use cases, and emphasis is put on the reality that most of you are implementing in a “brownfield” environment in which you must implement microservices alongside legacy applications with minimal disruption to your business. Microservices for the Enterprise covers state-of-the-art techniques around microservices messaging, service development and description, service discovery, governance, and data management technologies and guides you through the microservices design process. Also included is the importance of organizing services as core versus atomic, composite versus integration, and API versus edge, and how such organization helps to eliminate the use of a central ESB and expose services through an API gateway. What You'll Learn Design and develop microservices architectures with confidence Put into practice the most

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modern techniques around messaging technologies Apply the Service Mesh pattern to overcome inter-service communication challenges Apply battle-tested microservices security patterns to address real-world scenarios Handle API management, decentralized data management, and observability Who This Book Is For Developers and DevOps engineers responsible for implementing applications around a microservices architecture, and architects and analysts who are designing such systems

Practical Microservices Architectural Patterns

Architect enterprise-grade, Microservice-based solutions using Microsoft Azure Service Fabric. About This Book Explore architectural patterns for building modern day Microservice-based systems Learn about Microsoft Service Fabric as a platform to host distributed Microservices Discover multiple options for hosting Microservices on heterogeneous, cross-platform environments Learn to configure Azure Service Fabric clusters for enterprise-grade service deployments Who This Book Is For The book is aimed at IT architects, system administrators, and DevOps engineers who have a basic knowledge of the Microsoft Azure platform and are working on, or are curious about, the concepts of Microservices and Microservice architecture. What You Will Learn Understand the basics of Microservices and how Microsoft Azure fits into the equation Master Azure Service Fabric architecture and services Explore Azure Service Fabric application programming models

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Comprehensive study of various architecture patterns for building enterprise-grade Microservices Manage and deploy Microservices on Azure Service Fabric An insight into the future of Microservices with containers and serverless computing In Detail Microsoft Azure is rapidly evolving and is widely used as a platform on which you can build Microservices that can be deployed on-premise and on-cloud heterogeneous environments through Microsoft Azure Service Fabric. This book will help you understand the concepts of Microservice application architecture and build highly maintainable and scalable enterprise-grade applications using the various services in Microsoft Azure Service Fabric. We will begin by understanding the intricacies of the Microservices architecture and its advantages over the monolithic architecture and Service Oriented Architecture (SOA) principles. We will present various scenarios where Microservices should be used and walk you through the architectures of Microservice-based applications. Next, you will take an in-depth look at Microsoft Azure Service Fabric, which is the best-in-class platform for building Microservices. You will explore how to develop and deploy sample applications on Microsoft Azure Service Fabric to gain a thorough understanding of it. Building Microservice-based application is complicated. Therefore, we will take you through several design patterns that solve the various challenges associated with realizing the Microservices architecture in enterprise applications. Each pattern will be clearly illustrated with examples that you can keep referring to when designing applications. Finally, you will be introduced to advanced topics such as Serverless computing and DevOps using Service Fabric, to help you

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undertake your next venture with confidence. Style and approach This book introduces its readers to the concept of Microservices and Microsoft Azure Service Fabric as a distributed platform to host enterprise-grade Microservices. It then addresses common architectural challenges associated with the Microservice architecture, using proven architectural patterns.

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