Microservices Reference Architecture From Nginx Intro

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Monolith to Microservices - Sam Newman 2019-11-14
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 Delves into details of database decomposition, including the impact of breaking referential and transactional integrity, new failure modes, and more
Advances on P2P, Parallel, Grid, Cloud and Internet Computing - Leonard Barolli 2019-10-19
This book presents the latest research findings, innovative research results, methods and development techniques related to P2P, grid, cloud and Internet computing from both theoretical and practical perspectives. It also reveals the synergies among such large-scale computing paradigms. P2P, grid, cloud and Internet computing technologies have rapidly become established as breakthrough paradigms for solving complex problems by enabling aggregation and sharing of an increasing variety of distributed computational resources at large scale. Grid computing originated as a paradigm for high-performance computing, as an alternative to expensive supercomputers through different forms of large-scale distributed computing. P2P computing emerged as a new paradigm after client–server and web-based computing and has proved useful in the development of social networking, B2B (business to business), B2C (business to consumer), B2G (business to government), and B2E (business to employee). Cloud computing has been defined as a "computing paradigm where the boundaries of computing are determined by economic rationale rather than technical limits," and it has fast become a computing paradigm with applicability and adoption in all application domains and which provides utility computing at a large scale. Lastly, Internet computing is the basis of any large-scale distributed computing paradigms; it has developed into a vast area of flourishing fields with enormous impact on today's information societies, and serving as a universal platform comprising a large variety of computing forms such as grid, P2P, cloud and mobile computing.
Attribute-Based Access Control - Vincent C. Hu 2017-10-31
This comprehensive new resource provides an introduction to fundamental Attribute Based Access Control (ABAC) models. This book provides valuable information for developing ABAC to improve information sharing within organizations while taking into consideration the planning, design, implementation, and operation. It explains the history and model of ABAC, related standards, verification and assurance, applications, as well as deployment challenges. Readers find authoritative insight into specialized topics including formal ABAC history, ABAC's relationship with other access control models, ABAC model validation and analysis, verification and testing, and deployment frameworks such as XACML. Next Generation Access Model (NGAC) is explained, along with attribute considerations in implementation. The

book explores ABAC applications in SOA/workflow domains, ABAC architectures, and includes details on feature sets in commercial and open source products. This insightful resource presents a combination of technical and administrative information for models, standards, and products that will benefit researchers as well as implementers of ABAC systems in the field.
Present and Ulterior Software Engineering - Manuel Mazzara 2017-11-01
This book provides an effective overview of the state-of-the art in software engineering, with a projection of the future of the discipline. It includes 13 papers, written by leading researchers in the respective fields, on important topics like model-driven software development, programming language design, microservices, software reliability, model checking and simulation. The papers are edited and extended versions of the presentations at the PAUSE symposium, which marked the completion of 14 years of work at the Chair of Software Engineering at ETH Zurich. In this inspiring context, some of the greatest minds in the field extensively discussed the past, present and future of software engineering. It guides readers on a voyage of discovery through the discipline of software engineering today, offering unique food for thought for researchers and professionals, and inspiring future research and development.
Istio: Up and Running - Lee Calcote 2019-09-27
You did it. You successfully transformed your application into a microservices architecture. But now that you're running services across different environments—public to public, private to public, virtual machine to container—your cloud native software is beginning to encounter reliability issues. How do you stay on top of this ever-increasing complexity? With the Istio service mesh, you'll be able to manage traffic, control access, monitor, report, get telemetry data, manage quota, trace, and more with resilience across your microservice. In this book, Lee Calcote and Zack Butcher explain why your services need a service mesh and demonstrate step-by-step how Istio fits into the life cycle of a distributed application. You'll learn about the tools and APIs for enabling and managing many of the features found in Istio. Explore the observability challenges Istio addresses Use request routing, traffic shifting, fault injection, and other features essential to running a solid service mesh Generate and collect telemetry information Try different deployment patterns, including A/B, blue/green, and canary Get examples of how to develop and deploy real-world applications with Istio support
Microservices - Antonio Bucchiarone 2019-12-11
This book describes in contributions by scientists and practitioners the development of scientific concepts, technologies, engineering techniques and tools for a service-based society. The focus is on microservices, i.e cohesive, independent processes deployed in isolation and equipped with dedicated memory persistence tools, which interact via messages. The book is structured in six parts. Part 1 "Opening" analyzes the new (and old) challenges including service design and specification, data integrity, and consistency management and provides the introductory information needed to successfully digest the remaining parts. Part 2 "Migration" discusses the issue of migration from monoliths to microservices and their loosely coupled architecture. Part 3 "Modeling" introduces a catalog and a taxonomy of the most common microservices anti-patterns and identifies common problems. It also explains the concept of RESTful conversations and presents insights from studying and developing two further modeling approaches. Next , Part 4 is dedicated to various aspects of "Development and Deployment". Part 5 then covers "Applications" of microservices, presenting case studies from Industry 4.0, Netflix, and customized SaaS examples. Eventually, Part 6 focuses on "Education" and reports on experiences made in special programs, both at academic level as a master program course and for practitioners

in an industrial training. As only a joint effort between academia and industry can lead to the release of modern paradigm-based programming languages, and subsequently to the deployment of robust and scalable software systems, the book mainly targets researchers in academia and industry who develop tools and applications for microservices.

Microservice Architecture - Irakli Nadareishvili 2016-07-18
Have you heard about the tremendous success Amazon and Netflix have had by switching to a microservice architecture? Are you wondering how this can benefit your company? Or are you skeptical about how it might work? If you've answered yes to any of these questions, this practical book will benefit you. You'll learn how to take advantage of the microservice architectural style for building systems, and learn from the experiences of others to adopt and execute this approach most successfully.

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 build 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.

Developing with Docker - Jaroslaw Krochmalski 2016-11-30
Change the way your organization deploys software at scale with this fast-paced guide to the world of Docker About This Book Cut through the noise and in simple terms learn to package your applications and test, ship, and scale your containers Find and build images and successfully run your programs within containers Build, deploy, and test your Docker containers and put them to work in production Who This Book Is For This book is for IT professionals, system administrators, and DevOps professionals or anyone looking to quickly develop and deploy software to production at scale. If you are interested in Docker, DevOps, or containers in general, don't look any further. What You Will Learn Understand Docker's architecture Build, ship, and run distributed applications Deploy, automate, and manage the execution of applications within Docker Scale and virtualize images and containers Utilize the networking features that Docker offers Use repositories to store and

retrieve images In Detail This fast-paced practical guide will get you up and running with Docker. Using Docker, you will be able to build, ship, and run many distributed applications in real time. You will start with quickly installing Docker and start working with images and containers. We will present different types of containers and their applications, and show you how to find and build images. You will learn how you can contribute to the image repository by publishing different images. This will familiarize you with the image building process and you will be able to successfully run your programs within containers. By finishing this book, you will be well equipped in deploying your applications using Docker and will have a clear understanding of concepts, techniques, and practical methods to get it running in production systems. Style and approach This book takes a fast-paced practical approach that quickly gets you up and running with Docker so that you spend less time learning and more time deploying Docker containers effectively. This book contains a mix of concepts, practical examples, techniques, and the most up-to-date content to run things effectively in production. We'll show you the easiest way to speed up your development and deployment with Docker.

Microservices - Eberhard Wolff 2016-10-03
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 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.

PHP Microservices - Carlos Perez Sanchez 2017-03-29
Transit from monolithic architectures to highly available, scalable, and fault-tolerant microservices About This Book Build your own applications based on event-driven microservices and set them up on a production server. Successfully transform any monolithic application into a microservice. Monitor the health of your application, prevent downtime, and reduce costs. Who This Book Is For PHP developers who want to build scalable, highly available, and secure applications will find this book useful. No knowledge of microservices is assumed. What You Will Learn Set up a development environment using the right strategies and tools. Learn about application design and structure to start implementing your application. Transform a monolithic application into microservices. Explore the best way to start implementing your application using testing. Understand how to monitor your microservices, handle errors, and debug the application. Deploy your finished application into a production environment and learn how to solve common problems. Know how to scale your application based on microservices once it is up–and-running. In Detail The world is moving away from bulky, unreliable, and high-maintenance PHP applications, to small, easy-to-maintain and highly available microservices and the pressing need is for PHP developers to understand the criticalities in building effective microservices that scale

at large. This book will be a reliable resource, and one that will help you to develop your skills and teach you techniques for building reliable microservices in PHP. The book begins with an introduction to the world of microservices, and quickly shows you how to set up a development environment and build a basic platform using Docker and Vagrant. You will then get into the different design aspects to be considered while building microservices in your favorite framework and you will explore topics such as testing, securing, and deploying microservices. You will also understand how to migrate a monolithic application to the microservice architecture while keeping scalability and best practices in mind. Furthermore you will get into a few important DevOps techniques that will help you progress on to more complex domains such as native cloud development, as well as some interesting design patterns. By the end of this book you will be able to develop applications based on microservices in an organized and efficient way. You will also gain the knowledge to transform any monolithic applications into microservices. Style and approach Filled with code that you can start typing straightaway, this book will take you through building, testing, securing, and deploying microservices in the most practical way possible. The focus of the book is more inclined towards showing you how it's done, rather than with what to do, although you will get a good idea of those tools most widely used to build microservices.

Kubernetes: Up and Running - Kelsey Hightower 2017-09-07
Legend has it that Google deploys over two billion application containers a week. How's that possible? Google revealed the secret through a project called Kubernetes, an open source cluster orchestrator (based on its internal Borg system) that radically simplifies the task of building, deploying, and maintaining scalable distributed systems in the cloud. This practical guide shows you how Kubernetes and container technology can help you achieve new levels of velocity, agility, reliability, and efficiency. Authors Kelsey Hightower, Brendan Burns, and Joe Beda—who've worked on Kubernetes at Google and other organizatons—explain how this system fits into the lifecycle of a distributed application. You will learn how to use tools and APIs to automate scalable distributed systems, whether it is for online services, machine-learning applications, or a cluster of Raspberry Pi computers. Explore the distributed system challenges that Kubernetes addresses Dive into containerized application development, using containers such as Docker Create and run containers on Kubernetes, using the docker image format and container runtime Explore specialized objects essential for running applications in production Reliably roll out new software versions without downtime or errors Get examples of how to develop and deploy real-world applications in Kubernetes

NGINX Cookbook - Derek DeJonghe 2020-10-28
NGINX is one of the most widely used web servers available today, in part because of its capabilities as a load balancer and reverse proxy server for HTTP and other network protocols. This cookbook provides easy-to-follow examples to real-world problems in application delivery. The practical recipes will help you set up and use either the open source or commercial offering to solve problems in various use cases. For professionals who understand modern web architectures, such as n-tier or microservice designs, and common web protocols including TCP and HTTP, these recipes provide proven solutions for security, software load balancing, and monitoring and maintaining NGINX's application delivery platform. You'll also explore advanced features of both NGINX and NGINX Plus, the free and licensed versions of this server. You'll find recipes for: High-performance load balancing with HTTP, TCP, and UDP Securing access through encrypted traffic, secure links, HTTP authentication subrequests, and more Deploying NGINX to Google Cloud, AWS, and Azure cloud computing services Setting up and configuring NGINX Controller Installing and configuring the NGINX Plus App Protect module Enabling WAF through Controller ADC

Production-Ready Microservices - Susan J. Fowler 2016-11-30
One of the biggest challenges for organizations that have adopted microservice architecture is the lack of architectural, operational, and organizational standardization. After splitting a monolithic application or building a microservice ecosystem from scratch, many engineers are left wondering what's next. In this practical book, author Susan Fowler presents a set of microservice standards in depth, drawing from her experience standardizing over a thousand microservices at Uber. You'll learn how to design microservices that are stable, reliable, scalable, fault tolerant, performant, monitored, documented, and prepared for any catastrophe. Explore production-readiness standards, including: Stability and Reliability: develop, deploy, introduce, and deprecate microservices; protect against dependency failures Scalability and Performance: learn

essential components for achieving greater microservice efficiency Fault Tolerance and Catastrophe Preparedness: ensure availability by actively pushing microservices to fail in real time Monitoring: learn how to monitor, log, and display key metrics; establish alerting and on-call procedures Documentation and Understanding: mitigate tradeoffs that come with microservice adoption, including organizational sprawl and technical debt

Building Microservices with .NET Core 2.0 - Gaurav Aroraa 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.

Practical Microservices Architectural Patterns - Binildas Christudas 2019-06-25
Take your distributed applications to the next level and see what the reference architectures associated with microservices can do for you. This book begins by showing you the distributed computing architecture landscape and provides an in-depth view of microservices architecture. Following this, you will work with CQRS, an essential pattern for microservices, and get a view of how distributed messaging works. Moving on, you will take a deep dive into Spring Boot and Spring Cloud. Coming back to CQRS, you will learn how event-driven microservices work with this pattern, using the Axon 2 framework. This takes you on to how transactions work with microservices followed by advanced architectures to address non-functional aspects such as high availability and scalability. In the concluding part of the book you develop your own enterprise-grade microservices application using the Axon framework and true BASE transactions, while making it as secure as possible. What You Will Learn Shift from monolith architecture to microservices Work with distributed and ACID transactionsBuild solid architectures without two-phase commit transactions Discover the high availability principles in microservices Who This Book Is For Java developers with basic knowledge of distributed and multi-threaded application architecture, and no knowledge of Spring Boot or Spring Cloud. Knowledge of CQRS and event-driven architecture is not mandatory as this book will cover these in depth.

Cloud Native Java - Josh Long 2017-08-11
What separates the traditional enterprise from the likes of Amazon, Netflix, and Etsy? Those companies have refined the art of cloud native development to maintain their competitive edge and stay well ahead of the competition. This practical guide shows Java/JVM developers how to build better software, faster, using Spring Boot, Spring Cloud, and Cloud Foundry. Many organizations have already waded into cloud computing,

test-driven development, microservices, and continuous integration and delivery. Authors Josh Long and Kenny Bastani fully immerse you in the tools and methodologies that will help you transform your legacy application into one that is genuinely cloud native. In four sections, this book takes you through: The Basics: learn the motivations behind cloud native thinking; configure and test a Spring Boot application; and move your legacy application to the cloud Web Services: build HTTP and RESTful services with Spring; route requests in your distributed system; and build edge services closer to the data Data Integration: manage your data with Spring Data, and integrate distributed services with Spring's support for event-driven, messaging-centric architectures Production: make your system observable; use service brokers to connect stateful services; and understand the big ideas behind continuous delivery

Kubernetes for Full-Stack Developers - 2020-02-04
This book is designed to help newcomers and experienced users alike learn about Kubernetes. Its chapters are designed to introduce core Kubernetes concepts and to build on them to a level where running an application on a production cluster is a familiar, repeatable, and automated process. From there, more advanced topics are introduced, like how to manage a Kubernetes cluster itself.

TypeScript Microservices - Parth Ghiya 2018-05-30
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 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 knowledge of TypeScript and Node.js is assumed.

Microservices: Up and Running - Ronnie Mitra 2020-11-25
Microservices architectures offer faster change speeds, better scalability, and cleaner, evolvable system designs. But implementing your first microservices architecture is difficult. How do you make myriad choices, educate your team on all the technical details, and navigate the organization to a successful execution to maximize your chance of success? With this book, authors Ronnie Mitra and Irakli Nadareishvili provide step-by-step guidance for building an effective microservices architecture. Architects and engineers will follow an implementation journey based on techniques and architectures that have proven to work for microservices systems. You'll build an operating model, a microservices design, an infrastructure foundation, and two working microservices, then put those pieces together as a single implementation. For anyone tasked with building microservices or a microservices architecture, this guide is invaluable. Learn an effective and explicit end-to-end microservices system design Define teams, their responsibilities, and guidelines for working together Understand how to slice a big application into a collection of microservices Examine how to

isolate and embed data into corresponding microservices Build a simple yet powerful CI/CD pipeline for infrastructure changes Write code for sample microservices Deploy a working microservices application on Amazon Web Services

Microservices Patterns - Chris Richardson 2018-10-27
"A comprehensive overview of the challenges teams face when moving to microservices, with industry-tested solutions to these problems." - Tim Moore, Lightbend 44 reusable patterns to develop and deploy reliable production-quality microservices-based applications, with worked examples in Java Key Features 44 design patterns for building and deploying microservices applications Drawing on decades of unique experience from author and microservice architecture pioneer Chris Richardson A pragmatic approach to the benefits and the drawbacks of microservices architecture Solve service decomposition, transaction management, and inter-service communication Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About The Book Microservices Patterns teaches you 44 reusable patterns to reliably 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 composing services into systems that scale and perform under real-world conditions. More than just a patterns catalog, this practical guide with worked examples offers industry-tested advice to help you design, implement, test, and deploy your microservices-based application. What You Will Learn How (and why!) to use microservices architecture Service decomposition strategies Transaction management and querying patterns Effective testing strategies Deployment patterns This Book Is Written For 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

Building Microservices - Sam Newman 2015-02-02
Annotation Over the past 10 years, distributed systems have become more fine-grained. From the large multi-million line long monolithic applications, we are now seeing the benefits of smaller self-contained services. Rather than heavy-weight, hard to change Service Oriented Architectures, we are now seeing systems consisting of collaborating microservices. Easier to change, deploy, and if required retire, organizations which are in the right position to take advantage of them are yielding significant benefits. This book takes an holistic view of the things you need to be cognizant of in order to pull this off. It covers just enough understanding of technology, architecture, operations and organization to show you how to move towards finer-grained systems.

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 LearnExplore the use cases of microservices and monolithic architecture Discover the architecture patterns to build scalable, agile, and secure microservices applicationsDevelop and deploy microservices using Azure Service Fabric and Azure Kubernetes Service Secure microservices using the gateway patternSee the deployment options for

Microservices on Azure StackImplement 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.

Designing Microservices Using Django - Shayank Jain 2020-04-28
A step-by-step that will help you build Microservices architecture using Django and Python KEY FEATURES a- Understand in-depth the fundamentals of Microservicesa- Learn how to create and use Django APIs a- Use web technology such as Nginx, Gunicorn, UWSGI, and Postgresql to deploy a Django projectDESCRIPTION Microservices architectures solve the multiple problems of software architecture. Django is a full-stack development framework, written in python. This book includes everything necessary for web application development; from the user views to the information storage: model, persistence, relationships, controllers, forms, validations, rest API and a very useful back office. Furthermore, the book will show how to build production-ready microservices. It will help you create restful APIs and get familiar with Redis and Celery. Towards the end, the book will show how to secure these services and deploy these microservices using Django. Lastly, it will show how to scale our services. WHAT WILL YOU LEARN a- Understand the basics of Python, Django, and Microservices a- Learn how to deploy Microservices with Djangoa- Get familiar with Microservices Architecture - Designing, Principles, and Requirements a- Implement Asynchronous task, JWT API Authentication and AWS Serverless with Microservice architecture WHO THIS BOOK IS FOR This book is for those beginners who want to make their careers in software development. It starts from the basics of python and Django, takes the reader to the Microservices architecture. Table of Contents1. Basic of Python2. Major Pillars of OOPS with Python3. Getting Started with Django4. API Development with Django5. Database Modeling with Django6. First Django API Deployment on Web7. Django Project Deployment on various web servers8. What are Microservices9. Designing Microservice Systems10. Service Authentication11. Microservices Deployment With Django12. JWT Auth Service13. Asynchronous Tasks14. AWS Serverless15. How to Adopt Microservices in Practice About the Author Shayank Jain is a software developer and data analyst. He is strongly passionate about codingand architectural design. He has more than 6.5 years of professional experience in developingscalable software solutions for various organizations. He has been programming since theage of 16 and has developed software for mobile, web, hardware gaming and standaloneapplications. After getting his hands dirty with programming, he found many new ways to debug and deploy the code successfully with minimal time constraints. After reading and implementing, he found out that many critical concepts can be implemented easily in programming with correct and focused thinking. His research interests include information security, cryptography, analysis, design, and implementation of algorithms. He has extensively worked with python and implemented new ideas on various projects in his free time. He is also active in the computer science and education community. Through this book, he wants to share these methodologies and tricks with the beginners. Outside work, Shayank spends his spare time helping, coaching, and mentoring young people in taking up careers in technology. Your Blog links: https://shayankit.wixsite.com/intro25Your LinkedIn Profile: https://www.linkedin.com/in/shayankjain

Learn Microservices with Spring Boot - Moises Macero 2017-12-08
Build a microservices architecture with Spring Boot, by evolving an application from a small monolith to an event-driven architecture composed of several services. This book follows an incremental approach to teach microservice structure, test-driven development, Eureka, Ribbon, Zuul, and end-to-end tests with Cucumber. Author Moises Macero follows a very pragmatic approach to explain the benefits of using this type of software architecture, instead of keeping you distracted with theoretical concepts. He covers some of the state-of-the-art techniques in computer programming, from a practical point of view. You'll focus on what's important, starting with the minimum viable product but keeping the flexibility to evolve it. What You'll Learn Build microservices with Spring Boot Use event-driven architecture and messaging with RabbitMQ Create RESTful services with Spring Master service discovery with Eureka and load balancing with Ribbon Route requests with Zuul as your API gateway Write end-to-end rests for an event-driven architecture using Cucumber Carry out continuous integration and deployment Who This Book Is For Those with at least some prior experience with Java programming. Some prior exposure to Spring Boot recommended but not required.

Building Micro-Frontends - Luca Mezzalira 2021-11-17
What's the answer to today's increasingly complex web applications? Micro-frontends. Inspired by the microservices model, this approach lets you break interfaces into separate features managed by different teams of developers. With this practical guide, Luca Mezzalira shows software architects, tech leads, and software developers how to build and deliver artifacts atomically rather than use a big bang deployment. You'll learn how micro-frontends enable your team to choose any library or framework. This gives your organization technical flexibility and allows you to hire and retain a broad spectrum of talent. Micro-frontends also support distributed or colocated teams more efficiently. Pick up this book and learn how to get started with this technological breakthrough right away. Explore available frontend development architectures Learn how microservice principles apply to frontend development Understand the four pillars for creating a successful micro-frontend architecture Examine the benefits and pitfalls of existing micro-frontend architectures Learn principles and best practices for creating successful automation strategies Discover patterns for integrating micro-frontend architectures using microservices or a monolith API layer

Kubernetes Patterns - Bilgin Ibryam 2019-04-09
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 the platform with operators.

Enterprise Application Architecture with .NET Core - Ganesan Senthilvel 2017-04-25
Architect and design highly scalable, robust, clean and highly performant applications in .NET Core About This Book Incorporate architectural soft-skills such as DevOps and Agile methodologies to enhance program-level objectives Gain knowledge of architectural approaches on the likes of SOA architecture and microservices to provide traceability and rationale for architectural decisions Explore a variety of practical use cases and code examples to implement the tools and techniques described in the book Who This Book Is For This book is for experienced .NET developers who are aspiring to become architects of enterprise-grade applications, as well as software architects who would like to leverage .NET to create effective blueprints of applications. What You Will Learn Grasp the important aspects and best practices of application lifecycle management Leverage the popular ALM tools, application insights, and their usage to monitor performance, testability, and optimization tools in an enterprise Explore various authentication models such as social media-based authentication, 2FA and OpenID Connect, learn authorization techniques Explore Azure with various solution approaches for Microservices and Serverless architecture along with Docker containers Gain knowledge about the recent market trends and practices and how they can be achieved with .NET Core and Microsoft tools and technologies In Detail If you want to design and develop enterprise applications using .NET Core as the development framework and learn about industry-wide best practices and guidelines, then this book is for you. The book starts with a brief introduction to enterprise architecture, which will help you to understand what enterprise architecture is and what the key components are. It will then teach you about the types of patterns and the principles of software development, and explain the various aspects of distributed computing to keep your applications effective and scalable. These chapters act as a catalyst to start the practical implementation, and design and develop applications using different architectural approaches, such as layered architecture, service oriented architecture, microservices and cloud-specific solutions. Gradually, you will learn about the different approaches and models of the Security framework

and explore various authentication models and authorization techniques, such as social media-based authentication and safe storage using app secrets. By the end of the book, you will get to know the concepts and usage of the emerging fields, such as DevOps, BigData, architectural practices, and Artificial Intelligence. Style and approach Filled with examples and use cases, this guide takes a no-nonsense approach to show you the best tools and techniques required to become a successful software architect.

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 Microservices with Kubernetes - Gigi Sayfan 2019-07-05
Enhance your skills in building scalable infrastructure for your cloud-based applications Key FeaturesLearn to design a scalable architecture by building continuous integration (CI) pipelines with KubernetesGet an in-depth understanding of role-based access control (RBAC), continuous deployment (CD), and observabilityMonitor a Kubernetes cluster with Prometheus and GrafanaBook Description Kubernetes is among the most popular open-source platforms for automating the deployment, scaling, and operations of application containers across clusters of hosts, providing a container-centric infrastructure. Hands-On Microservices with Kubernetes starts by providing you with in-depth insights into the synergy between Kubernetes and microservices. You will learn how to use Delinkcious, which will serve as a live lab throughout the book to help you understand microservices and Kubernetes concepts in the context of a real-world application. Next, you will get up to speed with setting up a CI/CD pipeline and configuring microservices using Kubernetes ConfigMaps. As you cover later chapters, you will gain hands-on experience in securing microservices, and implementing REST, gRPC APIs, and a Delinkcious data store. In addition to this, you'll explore the Nuclio project, run a serverless task on Kubernetes, and manage and implement data-intensive tests. Toward the concluding chapters, you'll deploy microservices on Kubernetes and learn to maintain a well-monitored system. Finally, you'll discover the importance of service meshes and how to incorporate Istio into the Delinkcious cluster. By the end of this book, you'll have gained the skills you need to implement microservices on Kubernetes with the help of effective tools and best practices. What you will learnUnderstand the synergy between Kubernetes and microservicesCreate a complete CI/CD pipeline for your microservices on KubernetesDevelop microservices on Kubernetes with the Go kit framework using best practicesManage and monitor your system using Kubernetes and open-source toolsExpose your services through REST and gRPC APIsImplement and deploy serverless functions as a serviceExternalize authentication, authorization and traffic shaping using a service meshRun a Kubernetes cluster in the cloud on Google Kubernetes EngineWho this book is for This book is for developers, DevOps engineers, or anyone who wants to develop large-scale microservice-based systems on top of Kubernetes. If you are looking to use Kubernetes on live production projects or want to migrate existing systems to a modern containerized microservices system, then this book is for you. Coding skills, together with some knowledge of Docker, Kubernetes, and cloud concepts will be useful.
Microservices Security in Action - Wajjakkara Kankanamge Anthony Nuwan Dias 2020-07-11
"A complete guide to the challenges and solutions in securing microservices architectures." —Massimo Siani, FinDynamic Key Features Secure microservices infrastructure and code Monitoring, access control, and microservice-to-microservice communications Deploy securely using Kubernetes, Docker, and the Istio service mesh. Hands-on examples and

exercises using Java and Spring Boot Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. 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. About The Book Design and implement security into your microservices from the start. Microservices Security in Action teaches you to assess and address security challenges at every level of a Microservices application, from APIs to infrastructure. You'll find effective solutions to common security problems, including throttling and monitoring, access control at the API gateway, and microservice-to-microservice communication. Detailed Java code samples, exercises, and real-world business use cases ensure you can put what you've learned into action immediately. What You Will Learn 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 This Book Is Written For 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. Table of Contents PART 1 OVERVIEW 1 Microservices security landscape 2 First steps in securing microservices PART 2 EDGE SECURITY 3 Securing north/south traffic with an API gateway 4 Accessing a secured microservice via a single-page application 5 Engaging throttling, monitoring, and access control PART 3 SERVICE-TO-SERVICE COMMUNICATIONS 6 Securing east/west traffic with certificates 7 Securing east/west traffic with JWT 8 Securing east/west traffic over gRPC 9 Securing reactive microservices PART 4 SECURE DEPLOYMENT 10 Conquering container security with Docker 11 Securing microservices on Kubernetes 12 Securing microservices with Istio service mesh PART 5 SECURE DEVELOPMENT 13 Secure coding practices and automation
Building Microservices with .NET Core - Gaurav Kumar Aroraa 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.

Middleware Architecture - Mehdia Ajana El Khaddar 2021-12-22
Middleware refers to the intermediate software layer that bridges the gap between the heterogeneous hardware platforms and the backend applications requirements. It allows providing common services and programming abstractions and hiding the low-level management of the connected hardware. With the recent advances in distributed systems and enabling technologies, such as RFID, WSNs, IoT, IoE, cloud computing, context-aware pervasive computing, ubiquitous computing, etc., middleware design and development has become a necessity, taking increasing importance. This book provides a comprehensive overview of the different design patterns and reference models used in middleware architectures in general, followed by a description of specific middleware architectures dedicated to the use of the different emerging technologies, such as IoT, cloud computing, IEEE 802.11, etc. This book intends therefore to bring together in one place up-to-date contributions and remaining challenges in this fast-moving research area for the benefit of middleware systems' designers and applications developers.

Cloud Native Microservices with Spring and Kubernetes - Rajiv Srivastava 2021-07-03
Build and deploy scalable cloud native microservices using the Spring framework and Kubernetes. KEY FEATURES ● Complete coverage on how to design, build, run, and deploy modern cloud native microservices. ● Includes numerous sample code exercises on microservices, Spring and Kubernetes. ● Develop a stronghold on Kubernetes, Spring, and the microservices architecture. ● Complete guide of application containerization on Kubernetes containers. ● Coverage on managing modern applications and infrastructure using observability tools. DESCRIPTION The main objective of this book is to give an overview of cloud native microservices, their architecture, design patterns, best practices, real use cases and practical coverage of modern applications. This book covers a strong understanding of the fundamentals of microservices, API first approach, Testing, observability, API Gateway, Service Mesh and Kubernetes alternatives of Spring Cloud. This book covers the implementation of various design patterns of developing cloud native microservices using Spring framework docker and Kubernetes libraries. It covers containerization concepts and hands-on lab exercises like how to build, run and manage microservices applications using Kubernetes. After reading this book, the readers will have a holistic understanding of building, running, and managing cloud native microservices applications on Kubernetes containers. WHAT YOU WILL LEARN ● Learn fundamentals of microservice and design patterns. ● Learn microservices development using Spring Boot and Kubernetes. ● Learn to develop reactive, event-driven, and batch microservices. ● Perform end-to-end microservices testing using Cucumber. ● Implement API gateway,authentication & authorization,load balancing, caching, rate limiting. ● Learn observability and monitoring techniques of microservices. WHO THIS BOOK IS FOR This book is for the Spring Developers, Microservice Developers, Cloud Engineers, DevOps Consultants, Technical Architect and Solution Architects, who have some familiarity with application development, Docker and Kubernetes containers. TABLE OF CONTENTS 1. Overview of Cloud Native microservices 2. Microservice design patterns 3. API first approach 4. Build microservices using the Spring Framework 5. Batch microservices 6. Build reactive and event-driven microservices 7. The API gateway, security, and distributed caching with Redis 8. Microservices testing and API mocking 9. Microservices observability 10. Containers and Kubernetes overview and architecture 11. Run microservices on Kubernetes 12. Service Mesh and Kubernetes alternatives of Spring Cloud

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

Micro Frontends in Action - Michael Geers 2020-10-13
Micro Frontends in Action teaches you to apply the microservices approach to the frontend. 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 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 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

The Art of Scalability - Martin L. Abbott 2015-05-23
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 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

Managing Software Crisis: A Smart Way to Enterprise Agility - Sergey V. Zykov 2018-04-20
This book discusses smart, agile software development methods and their applications for enterprise crisis management, presenting a systematic approach that promotes agility and crisis management in software engineering. The key finding is that these crises are caused by both technology-based and human-related factors. Being mission-critical, human-related issues are often neglected. To manage the crises, the book suggests an efficient agile methodology including a set of models, methods, patterns, practices and tools. Together, these make a survival toolkit for large-scale software development in crises. Further, the book analyses lifecycles and methodologies focusing on their impact on the project timeline and budget, and incorporates a set of industry-based patterns, practices and case studies, combining academic concepts and practices of software engineering.

Python Microservices Development - Tarek Ziade 2017-07-25
A practical approach to conquering the complexities of Microservices using the Python tooling ecosystem About This Book A very useful guide for Python developers who are shifting to the new microservices-based development A concise, up-to-date guide to building efficient and lightweight microservices in Python using Flask, Tox, and other tools Learn to use Docker containers, CoreOS, and Amazon Web Services to deploy your services Who This Book Is For This book is for developers who have basic knowledge of Python, the command line, and HTTP-based application principles, and those who want to learn how to build, test, scale, and manage Python 3 microservices. No prior experience of writing microservices in Python is assumed. What You Will Learn Explore what microservices are and how to design them Use Python 3, Flask, Tox, and other tools to build your services using best practices Learn how to use a TDD approach Discover how to document your microservices Configure and package your code in the best way Interact with other services Secure, monitor, and scale your services Deploy your services in Docker containers, CoreOS, and Amazon Web Services In Detail We often deploy our web applications into the cloud, and our code

needs to interact with many third-party services. An efficient way to build applications to do this is through microservices architecture. But, in practice, it's hard to get this right due to the complexity of all the pieces interacting with each other. This book will teach you how to overcome these issues and craft applications that are built as small standard units, using all the proven best practices and avoiding the usual traps. It's a practical book: you'll build everything using Python 3 and its amazing tooling ecosystem. You will understand the principles of TDD and apply them. You will use Flask, Tox, and other tools to build your services using best practices. You will learn how to secure connections between services, and how to script Nginx using Lua to build web application firewall features such as rate limiting. You will also familiarize yourself with Docker's role in microservices, and use Docker containers, CoreOS, and Amazon Web Services to deploy your services. This book will take you on a journey, ending with the creation of a complete Python application based on microservices. By the end of the book, you will be well versed with the fundamentals of building, designing, testing, and deploying your Python microservices. Style and approach This book is an linear, easy-to-follow guide on how to best design, write, test, and deploy your microservices. It includes real-world examples that will help Python developers create their own Python microservice using the most efficient methods.

Enterprise Java Microservices - Kenneth Finnigan 2018-09-27
Summary Enterprise Java Microservices is an example-rich tutorial that shows how to design and manage large-scale Java applications as a collection of microservices. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Large applications are easier to develop and maintain when you build them from small, simple components. Java developers now enjoy a wide range of tools that support microservices application development, including right-sized app servers, open source frameworks, and well-defined patterns. Best of all, you can build microservices applications using your existing Java skills. About the Book Enterprise Java Microservices teaches you to design and build JVM-based microservices applications. You'll start by learning how microservices designs compare to traditional Java EE applications. Always practical, author Ken Finnigan introduces big-picture concepts along with the tools and techniques you'll need to implement them. You'll discover ecosystem components like Netflix Hystrix for fault tolerance and master the Just enough Application Server (JeAS) approach. To ensure smooth operations, you'll also examine monitoring, security, testing, and deploying to the cloud. What's inside The microservices mental model Cloud-native development Strategies for fault tolerance and monitoring Securing your finished applications About the Reader This book is for Java developers familiar with Java EE. About the Author Ken Finnigan leads the Thorntail project at Red Hat, which seeks to make developing microservices for the cloud with Java and Java EE as easy as possible. Table of Contents PART 1 MICROSERVICES BASICS Enterprise Java microservices Developing a simple RESTful microservice Just enough Application Server for microservices Microservices testing Cloud native development PART 2 - IMPLEMENTING ENTERPRISE JAVA MICROSERVICES Consuming microservices Discovering microservices for consumption Strategies for fault tolerance and monitoring Securing a microservice Architecting a microservice hybrid Data streaming with Apache Kafka