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# Istio Up And Running Using A Service Mesh To Conn

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*Istio Up And Running  
Using A Service Mesh  
To Conn*

2021-06-22

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## GRIFFIN ALANNAH

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*Istio O'Reilly*

Solve difficult service-to-service communication challenges around security, observability, routing, and resilience with an Istio-based service mesh. Istio allows you to define these traffic policies as configuration and enforce them consistently without needing any service-code changes. In Istio in Action you will learn: Why and when to use a service mesh Envoy's role in Istio's service mesh Allowing "North-South" traffic into a mesh Fine-grained traffic routing Make your services robust to network failures Gain observability over your system with telemetry "golden signals" How Istio makes your services secure by default Integrate cloud-native applications with legacy workloads such as in VMs Reduce the operational complexity of your microservices with an Istio-powered service mesh! Istio in Action shows you how to implement this powerful new architecture and move your application-networking concerns to a dedicated infrastructure layer. Non-functional concerns stay separate from

your application, so your code is easier to understand, maintain, and adapt regardless of programming language. In this practical guide, you'll go hands-on with the full-featured Istio service mesh to manage microservices communication. Helpful diagrams, example configuration, and examples make it easy to understand how to control routing, secure container applications, and monitor network traffic. Foreword by Eric Brewer. About the technology Offload complex microservice communication layer challenges to Istio! The industry-standard Istio service mesh radically simplifies security, routing, observability, and other service-to-service communication challenges. With Istio, you use a straightforward declarative configuration style to establish application-level network policies. By separating communication from business logic, your services are easier to write, maintain, and modify. About the book Istio in Action teaches you how to implement an Istio-based service mesh that can handle complex routing scenarios, traffic encryption, authorization, and other common network-related tasks. You'll start by

defining a basic service mesh and exploring the data plane with Istio's service proxy, Envoy. Then, you'll dive into core topics like traffic routing and visualization and service-to-service authentication, as you expand your service mesh to workloads on multiple clusters and legacy VMs. What's inside Comprehensive coverage of Istio resources Practical examples to showcase service mesh capabilities Implementation of multi-cluster service meshes How to extend Istio with WebAssembly Traffic routing and observability VM integration into the mesh About the reader For developers, architects, and operations engineers. About the author Christian Posta is a well-known architect, speaker, and contributor. Rinor Maloku is an engineer at Solo.io working on application networking solutions. ToC PART 1 UNDERSTANDING ISTIO 1 Introducing the Istio service mesh 2 First steps with Istio 3 Istio's data plane: The Envoy proxy PART 2 SECURING, OBSERVING, AND CONTROLLING YOUR SERVICE'S NETWORK TRAFFIC 4 Istio gateways: Getting traffic into a cluster 5 Traffic control: Fine-grained traffic routing 6 Resilience: Solving application networking challenges 7 Observability: Understanding the behavior of your services 8 Observability: Visualizing network behavior with Grafana, Jaeger, and Kiali 9 Securing microservice communication PART 3 ISTIO DAY-2 OPERATIONS 10 Troubleshooting the data plane 11 Performance-tuning the control plane PART 4 ISTIO IN YOUR ORGANIZATION 12 Scaling Istio in your organization 13 Incorporating virtual machine workloads into the mesh 14 Extending Istio on the request path **Quarkus Cookbook** O'Reilly Media Keen to build web applications for the

cloud? Get a quick hands-on introduction to OpenShift, the open source Platform as a Service (PaaS) offering from Red Hat. With this practical guide, you'll learn the steps necessary to build, deploy, and host a complete real-world application on OpenShift without having to slog through long, detailed explanations of the technologies involved. OpenShift enables you to use Docker application containers and the Kubernetes cluster manager to automate the way you create, ship, and run applications. Through the course of the book, you'll learn how to use OpenShift and the Wildfly application server to build and then immediately deploy a Java application online. Learn about OpenShift's core technology, including Docker-based containers and Kubernetes Use a virtual machine with OpenShift installed and configured on your local environment Create and deploy your first application on the OpenShift platform Add language runtime dependencies and connect to a database Trigger an automatic rebuild and redeployment when you push changes to the repository Get a working environment up in minutes with application templates Use commands to check and debug your application Create and build Docker-based images for your application **Cloud Native DevOps with Kubernetes** Simon and Schuster In a microservices architecture, the whole is indeed greater than the sum of its parts. But in practice, individual microservices can inadvertently impact others and alter the end user experience. Effective microservices architectures require standardization on an organizational level with the help of a platform engineering team. This practical book provides a series of

progressive steps that platform engineers can apply technically and organizationally to achieve highly resilient Java applications. Author Jonathan Schneider covers many effective SRE practices from companies leading the way in microservices adoption. You'll examine several patterns discovered through much trial and error in recent years, complete with Java code examples. Chapters are organized according to specific patterns, including: Application metrics: Monitoring for availability with Micrometer Debugging with observability: Logging and distributed tracing; failure injection testing Charting and alerting: Building effective charts; KPIs for Java microservices Safe multicloud delivery: Spinnaker, deployment strategies, and automated canary analysis Source code observability: Dependency management, API utilization, and end-to-end asset inventory Traffic management: Concurrency of systems; platform, gateway, and client-side load balancing [Hands-On Kubernetes on Azure](#) Packt Publishing Ltd

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 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 *Full Stack Development with JHipster* Simon and Schuster

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 *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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**Istio: Up and Running** Apress

This two-volume set constitutes the revised selected papers of the 18th CCF Conference on Computer Supported Cooperative Work and Social Computing, ChineseCSCW 2023 held in Harbin, China, in August 2023. The 54 full papers and 28 short papers presented in these proceedings were carefully reviewed and selected from 221 submissions. The papers are organized in the following topical sections: Social Media and Online Communities; Collaborative Mechanisms, Models, Approaches, Algorithms and Systems; Crowd Intelligence and Crowd Cooperative Computing; Cooperative Evolutionary Computation and Human-like Intelligent Collaboration; Domain-Specific Collaborative Applications. [Microservices with Spring Boot and Spring Cloud](#) O'Reilly Media

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

*Knative in Action* Packt Publishing Ltd

While Kubernetes has greatly simplified the task of deploying containerized applications, managing this orchestration framework on a daily basis can still be a complex undertaking. With this practical book, site reliability and DevOps engineers will learn how to build, operate, manage, and upgrade a Kubernetes cluster—whether it resides on cloud infrastructure or on-premises. Brendan Burns, cofounder of Kubernetes, and Craig Tracey, staff field engineer at Heptio, dissect how Kubernetes works internally and demonstrate ways to maintain, adjust, and improve the cluster to suit your particular use case. You'll learn how to make architectural choices for designing a cluster, managing access control, monitoring and alerting, and upgrading Kubernetes. Dive in and discover how to take full advantage of this orchestration framework's capabilities. Learn how your cluster operates, how developers use it to deploy applications, and how Kubernetes can facilitate a developer's job Adjust, secure, and tune your cluster by understanding Kubernetes APIs and configuration options Detect cluster-level problems early and learn the steps

necessary to respond and recover quickly Determine how and when to add libraries, tools, and platforms that build on, extend, or otherwise improve a Kubernetes cluster

### **Istio in Action** O'Reilly Media

Go beyond simply learning Kubernetes fundamentals and its deployment, and explore more advanced concepts, including serverless computing and service meshes with the latest updates

**Key Features** Master Kubernetes architecture and design to build and deploy secure distributed applications Learn advanced concepts like autoscaling, cluster federation, serverless computing, and service mesh integration for observability Explore Kubernetes 1.18 features and its rich ecosystem of tools like Kubectl, Knative, and Helm

**Book Description** The third edition of *Mastering Kubernetes* is updated with the latest tools and code enabling you to learn Kubernetes 1.18's latest features. This book primarily concentrates on diving deeply into complex concepts and Kubernetes best practices to help you master the skills of designing and deploying large clusters on various cloud platforms. The book trains you to run complex stateful microservices on Kubernetes including advanced features such as horizontal pod autoscaling, rolling updates, resource quotas, and persistent storage backend. With the two new chapters, you will gain expertise in serverless computing and utilizing service meshes. As you proceed through the chapters, you will explore different options for network configuration and learn to set up, operate, and troubleshoot Kubernetes networking plugins through real-world use cases. Furthermore, you will understand the mechanisms of custom resource development and its

utilization in automation and maintenance workflows. By the end of this Kubernetes book, you will graduate from an intermediate to advanced Kubernetes professional. What you will learn

**Master the fundamentals of** Kubernetes architecture and design

**Build and run stateful applications and complex microservices on** Kubernetes

**Use tools like** Kubectl, secrets, and Helm to manage resources and storage

**Master Kubernetes Networking with load balancing options like** Ingress

**Achieve high-availability** Kubernetes clusters

**Improve Kubernetes observability with tools like** Prometheus, Grafana, and Jaeger

**Extend Kubernetes working with** Kubernetes API, plugins, and webhooks

**Who this book is for** If you are a system administrator or a cloud developer with working knowledge of Kubernetes and are keen to master its advanced features, along with learning everything from building microservices to utilizing service meshes, *Mastering Kubernetes* is for you. Basic familiarity with networking concepts will be helpful.

**Istio in Action** "O'Reilly Media, Inc." Build an in-depth understanding of the Istio service mesh and see why a service mesh is required for a distributed application. This book covers the Istio architecture and its features using a hands-on approach with language-neutral examples. To get your Istio environment up and running, you will go through its setup and learn the concepts of control plane and data plane. You will become skilled with the new concepts and apply them with best practices to continuously deliver applications. What You Will Learn Discover the Istio architecture components and the Envoy proxy

**Master traffic management for service routing and application deployment** Build application resiliency



using timeout, circuit breakers, and connection pools. Monitor using Prometheus and Grafana. Configure application security. Who This Book Is For: Developers and project managers who are trying to run their application using Kubernetes. The book is not specific for any programming language even though all examples will be in Java or Python.

[Learning Helm](#) Packt Publishing Ltd

IBM® Cloud Private is an application platform for developing and managing containerized applications across hybrid cloud environments, on-premises and public clouds. It is an integrated environment for managing containers that includes the container orchestrator Kubernetes, a private image registry, a management console, and monitoring frameworks. This IBM Redbooks® publication covers tasks that are performed by IBM Cloud™ Private application developers, such as deploying applications, application packaging with Helm, application automation with DevOps, using Microclimate, and managing your service mesh with Istio. The authors team has many years of experience in implementing IBM Cloud Private and other cloud solutions in production environments. Throughout this book, we used the approach of providing you the recommended practices in those areas. As part of this project, we also developed several code examples, which can be downloaded from the Redbooks GitHub web page. If you are an IBM Cloud Private application developer, this book is for you. If you are an IBM Cloud Private systems administrator, you can see the IBM Redbooks publication *IBM Private Cloud Systems Administrator's Guide*, SG248440.

*Kubeflow Operations Guide* "O'Reilly Media, Inc."

Kubernetes is the operating system of the cloud native world, providing a reliable and scalable platform for running containerized workloads. In this friendly, pragmatic book, cloud experts John Arundel and Justin Domingus show you what Kubernetes can do—and what you can do with it. You'll learn all about the Kubernetes ecosystem, and use battle-tested solutions to everyday problems. You'll build, step by step, an example cloud native application and its supporting infrastructure, along with a development environment and continuous deployment pipeline that you can use for your own applications. Understand containers and Kubernetes from first principles; no experience necessary. Run your own clusters or choose a managed Kubernetes service from Amazon, Google, and others. Use Kubernetes to manage resource usage and the container lifecycle. Optimize clusters for cost, performance, resilience, capacity, and scalability. Learn the best tools for developing, testing, and deploying your applications. Apply the latest industry practices for security, observability, and monitoring. Adopt DevOps principles to help make your development teams lean, fast, and effective.

**gRPC: Up and Running** Simon and Schuster

Summary: Go from zero to production readiness with Docker in 22 bite-sized lessons! Learn Docker in a Month of Lunches is an accessible task-focused guide to Docker on Linux, Windows, or Mac systems. In it, you'll learn practical Docker skills to help you tackle the challenges of modern IT, from cloud migration and microservices to handling legacy systems. There's no excessive theory or niche-use cases—just a quick-and-easy guide to the essentials of

Docker you'll use every day. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology The idea behind Docker is simple: package applications in lightweight virtual containers that can be easily installed. The results of this simple idea are huge! Docker makes it possible to manage applications without creating custom infrastructures. Free, open source, and battle-tested, Docker has quickly become must-know technology for developers and administrators. About the book Learn Docker in a Month of Lunches introduces Docker concepts through a series of brief hands-on lessons. Following a learning path perfected by author Elton Stoneman, you'll run containers by chapter 2 and package applications by chapter 3. Each lesson teaches a practical skill you can practice on Windows, macOS, and Linux systems. By the end of the month you'll know how to containerize and run any kind of application with Docker. What's inside Package applications to run in containers Put containers into production Build optimized Docker images Run containerized apps at scale About the reader For IT professionals. No previous Docker experience required. About the author Elton Stoneman is a consultant, a former architect at Docker, a Microsoft MVP, and a Pluralsight author. Table of Contents PART 1 - UNDERSTANDING DOCKER CONTAINERS AND IMAGES 1. Before you begin 2. Understanding Docker and running Hello World 3. Building your own Docker images 4. Packaging applications from source code into Docker Images 5. Sharing images with Docker Hub and other registries 6. Using Docker volumes for persistent storage PART 2 - RUNNING DISTRIBUTED APPLICATIONS IN CONTAINERS 7.

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recipes in this cookbook show you how to apply Knative in real enterprise application development. Authors Kamesh Sampath and Burr Sutter include chapters on autoscaling, build and eventing, observability, Knative on OpenShift, and more. With this cookbook, you'll learn how to: Efficiently build, deploy, and manage modern serverless workloads Apply Knative in real enterprise scenarios, including advanced eventing Monitor your Knative serverless applications effectively Integrate Knative with CI/CD principles, such as using pipelines for faster, more successful production deployments Deploy a rich ecosystem of enterprise integration patterns and connectors in Apache Camel K as Kubernetes and Knative components

Sustainable Development and Innovations in Marine Technologies  
O'Reilly Media

With over 75 million downloads per month, Spring Boot is the most widely used Java framework available. Its ease and power have revolutionized application development from monoliths to microservices. Yet Spring Boot's simplicity can also be confounding. How do developers learn enough to be productive immediately? This practical book shows you how to use this framework to write successful mission-critical applications. Mark Heckler from VMware, the company behind Spring, guides you through Spring Boot's architecture and approach, covering topics such as debugging, testing, and deployment. If you want to develop cloud native Java or Kotlin applications with Spring Boot rapidly and effectively--using reactive programming, building APIs, and creating database access of all kinds--this book is for you. Learn how Spring Boot simplifies cloud native

application development and deployment Build reactive applications and extend communication across the network boundary to create distributed systems Understand how Spring Boot's architecture and approach increase developer productivity and application portability Deploy Spring Boot applications for production workloads rapidly and reliably Monitor application and system health for optimal performance and reliability Debug, test, and secure cloud-based applications painlessly

Hands-On Microservices with Spring Boot and Spring Cloud "O'Reilly Media, Inc." Understand how to use service mesh architecture to efficiently manage and safeguard microservices-based applications with the help of examples Key Features Manage your cloud-native applications easily using service mesh architecture Learn about Istio, Linkerd, and Consul - the three primary open source service mesh providers Explore tips, techniques, and best practices for building secure, high-performance microservices Book Description Although microservices-based applications support DevOps and continuous delivery, they can also add to the complexity of testing and observability. The implementation of a service mesh architecture, however, allows you to secure, manage, and scale your microservices more efficiently. With the help of practical examples, this book demonstrates how to install, configure, and deploy an efficient service mesh for microservices in a Kubernetes environment. You'll get started with a hands-on introduction to the concepts of cloud-native application management and service mesh architecture, before learning how to build your own Kubernetes environment. While

exploring later chapters, you'll get to grips with the three major service mesh providers: Istio, Linkerd, and Consul. You'll be able to identify their specific functionalities, from traffic management, security, and certificate authority through to sidecar injections and observability. By the end of this book, you will have developed the skills you need to effectively manage modern microservices-based applications. What you will learn Compare the functionalities of Istio, Linkerd, and Consul Become well-versed with service mesh control and data plane concepts Understand service mesh architecture with the help of hands-on examples Work through hands-on exercises in traffic management, security, policy, and observability Set up secure communication for microservices using a service mesh Explore service mesh features such as traffic management, service discovery, and resiliency Who this book is for This book is for solution architects and network administrators, as well as DevOps and site reliability engineers who are new to the cloud-native framework. You will also find this book useful if you're looking to build a career in DevOps, particularly in operations. Working knowledge of Kubernetes and building microservices that are cloud-native is necessary to get the most out of this book.

*IBM Cloud Private Application*

*Developer's Guide* Packt Publishing Ltd

Efficiently deploy and manage Kubernetes clusters on a cloud Key Features Deploy highly scalable applications with Kubernetes on Azure Leverage AKS to deploy, manage, and operations of Kubernetes Gain best practices from this guide to increase efficiency of container orchestration service on Cloud Book Description Microsoft is now one of the most

significant contributors to Kubernetes open source projects. Kubernetes helps to create, configure, and manage a cluster of virtual machines that are preconfigured to run containerized applications. This book will be your resource for achieving successful container orchestration and deployment of Kubernetes clusters on Azure. You will learn how to deploy and manage highly scalable applications, along with how to set up a production-ready Kubernetes cluster on Azure. With this book, you will be able to reduce the complexity and operational overheads of managing a Kubernetes cluster on Azure. By the end of this book, you will not only be capable of deploying and managing Kubernetes clusters on Azure with ease, but also have the knowledge of industry best practices to work with advanced Azure Kubernetes Services (AKS) concepts for complex systems. What you will learn Get to grips with Microsoft AKS deployment, management, and operations Learn about the benefits of using Microsoft AKS, as well as the limitations, and avoid potential problems Integrate Microsoft toolchains such as Visual Studio Code, and Git Implement simple and advanced AKS solutions Implement the automated scalability and high reliability of secure deployments with Microsoft AKS Use kubectl commands to monitor applications Who this book is for If you're a cloud engineer, cloud solution provider, sysadmin, site reliability engineer, or a developer interested in DevOps and are looking for an extensive guide to running Kubernetes in the Azure environment then, this book is for you. Though any previous knowledge of Kubernetes is not expected, some experience with Linux and Docker containers would be beneficial.

**Microservices Security in Action**

O'Reilly Media

Go beyond the basics of Kubernetes and explore more advanced concepts, including Kubernetes in production, governance, serverless computing, and service meshes. Purchase of the print or Kindle book includes a free eBook in PDF format. Key Features Master Kubernetes architecture and design to build, deploy, and secure large-scale distributed systems Learn advanced concepts like autoscaling, multi-cluster management, serverless computing, service meshes and policy engines Explore Kubernetes 1.25 and its rich ecosystem of tools like Kubectl, Krew, K9s, Lens, and Helm Book Description The fourth edition of the bestseller Mastering Kubernetes includes the most recent tools and code to enable you to learn the latest features of Kubernetes 1.25. This book contains a thorough exploration of complex concepts and best practices to help you master the skills of designing and deploying large-scale distributed systems on Kubernetes clusters. You'll learn how to run complex stateless and stateful microservices on Kubernetes, including advanced features such as horizontal pod autoscaling, rolling updates, resource quotas, and persistent storage backends. In addition, you'll understand how to utilize serverless computing and service meshes. Further, two new chapters have been added. "Governing Kubernetes" covers the problem of policy management, how admission control addresses it, and how policy engines provide a powerful governance solution. "Running Kubernetes in Production" shows you what it takes to run Kubernetes at scale across multiple cloud providers, multiple geographical regions, and multiple clusters, and it also explains how to handle topics such as upgrades, capacity

planning, dealing with cloud provider limits/quotas, and cost management. By the end of this Kubernetes book, you'll have a strong understanding of, and hands-on experience with, a wide range of Kubernetes capabilities. What you will learn Learn how to govern Kubernetes using policy engines Learn what it takes to run Kubernetes in production and at scale Build and run stateful applications and complex microservices Master Kubernetes networking with services, Ingress objects, load balancers, and service meshes Achieve high availability for your Kubernetes clusters Improve Kubernetes observability with tools such as Prometheus, Grafana, and Jaeger Extend Kubernetes with the Kubernetes API, plugins, and webhooks Who this book is for If you're a system administrator or cloud developer who wants to become comfortable with Kubernetes and would like to master its advanced features, then this book is for you. Software and DevOps engineers with a working knowledge of Kubernetes, as well as technical managers of Kubernetes-based systems, will also find this book useful. Those deciding on whether to migrate to Kubernetes and are curious about its inner workings will find plenty of answers here as well. Basic familiarity with networking concepts will prove beneficial.

### **Microservices: Up and Running**

Apress

"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 **OpenShift for Developers** Simon and Schuster 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.

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