

The Kubernetes Book Version 2 2 January 2018

Mastering Apache Spark 2.x Hands-On Microservices with Kubernetes Kubernetes Best Practices Mastering Kubernetes Designing Data-Intensive Applications Istio: Up and Running Managing Kubernetes Docker Deep Dive Learn Azure in a Month of Lunches, Second Edition Kubernetes: Up and Running DevOps with Kubernetes Architecting for Scale Kubernetes for Full-Stack Developers Kubernetes in Action Kubernetes Cookbook Getting Started with Kubernetes Docker in Practice Learn Kubernetes - Container orchestration using Docker Terraform: Up & Running Learn Helm The Docker Book The The Kubernetes Workshop Kubernetes Cookbook Kubernetes Patterns Kubernetes Operators Introducing Azure Kubernetes Service Kubernetes Cloud Native DevOps with Kubernetes Kubernetes for Developers Learn Docker in a Month of Lunches Beginning Kubernetes on the Google Cloud Platform Getting Started with Kubernetes Full Stack Development with JHipster Kubernetes Microservices with Docker Kubernetes Cookbook Kubernetes - A Complete DevOps Cookbook Container Security Hands-On Kubernetes on Windows The Kubernetes Book Programming Kubernetes

Mastering Apache Spark 2.x

Have you been looking for the most efficient way to develop and deploy applications fast with Kubernetes and make your software development process (and test process) simpler but don't know how to get started? If you've answered YES, keep reading You Are 1-Click Away From Discovering How To Leverage The Power Of Kubernetes To Streamline And Fasten The Process Of Developing, Deploying And Testing Applications! Truth is, deploying containers is simple, and many software companies don't have a problem with it -at that level. However, when it comes to doing the actual running of containers in production, it becomes a huge problem because then you can end up with countless (sometimes even millions) containers -if you're using micro-services- over time. There is need to deploy, manage and connect them to the outside world- which includes scheduling and distribution, and I bet you wouldn't dare think of going about this process manually because of the size of dev or ops army you'd require to achieve that. Which is where Kubernetes, the best container orchestration system comes in. But you already know that, don't you? Perhaps you're here because you've been wondering: What is Kubernetes, and how does it work? How is Kubernetes different from other container management systems? What can Kubernetes do? How would it help me? How do I get Kubernetes on my computer system and get started? If you've been asking yourself these or similar questions, this book is about to become the best thing that has happened to your life and business recently (or ever). From the basics of this platform, its main features and pros, to how you can benefit from it and get started with it like a professional, this book offers to you everything you've been looking for! Here's a snapshot of what you'll learn from it: What Kubernetes is and how it works What containers are, and why they're important Why Google Kubernetes is stands out from many of other similar platforms out there The basic features of Kubernetes Details about the Kubernetes master, Node Components and Network How to set up Kubernetes in simple steps on Mac, Windows, Linux, Google Cloud, Microsoft Azure and AWS How to run containers on Kubernetes What you need to learn in advanced Kubernetes

concepts including Kubectl, pods, ReplicaSet and Deployments How to work with services, load balancing and networks And much more! Are you ready to simplify your daily container workflow to make the (promised) potential of container technology a reality through automation? Are you ready to be able to handle storage, networking, alerting, logs and other tasks for all your containers automatically and join the countless enterprises that are enjoying increased efficiency and high returns following their adoption of this amazing technology? If you are, Scroll up and click Buy Now With 1-Click or Buy Now to get started!

Hands-On Microservices with Kubernetes

Exploit design, deployment, and management of large-scale containers Key Features Explore the latest features available in Kubernetes 1.10 Ensure that your clusters are always available, scalable, and up to date Master the skills of designing and deploying large clusters on various cloud platforms Book Description Kubernetes is an open source system that is used to automate the deployment, scaling, and management of containerized applications. If you are running more containers or want automated management of your containers, you need Kubernetes at your disposal. To put things into perspective, Mastering Kubernetes walks you through the advanced management of Kubernetes clusters. To start with, you will learn the fundamentals of both Kubernetes architecture and Kubernetes design in detail. You will discover how to run complex stateful microservices on Kubernetes including advanced features such as horizontal pod autoscaling, rolling updates, resource quotas, and persistent storage backend. Using real-world use cases, you will explore the options for network configuration, and understand how to set up, operate, and troubleshoot various Kubernetes networking plugins. In addition to this, you will get to grips with custom resource development and utilization in automation and maintenance workflows. To scale up your knowledge of Kubernetes, you will encounter some additional concepts based on the Kubernetes 1.10 release, such as Prometheus, Role-based access control, API aggregation, and more. By the end of this book, you'll know everything you need to graduate from intermediate to advanced level of understanding Kubernetes. What you will learn Architect a robust Kubernetes cluster for long-time operation Discover the advantages of running Kubernetes on GCE, AWS, Azure, and bare metal Understand the identity model of Kubernetes, along with the options for cluster federation Monitor and troubleshoot Kubernetes clusters and run a highly available Kubernetes Create and configure custom Kubernetes resources and use third-party resources in your automation workflows Enjoy the art of running complex stateful applications in your container environment Deliver applications as standard packages Who this book is for Mastering Kubernetes is for you if you are a system administrator or a developer who has an intermediate understanding of Kubernetes and wish to master its advanced features. Basic knowledge of networking would also be helpful. In all, this advanced-level book provides a smooth pathway to mastering Kubernetes.

Kubernetes Best Practices

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.

Mastering Kubernetes

Advanced analytics on your Big Data with latest Apache Spark 2.x About This Book An advanced guide with a combination of instructions and practical examples to extend the most up-to-date Spark functionalities. Extend your data processing capabilities to process huge chunk of data in minimum time using advanced concepts in Spark. Master the art of real-time processing with the help of Apache Spark 2.x Who This Book Is For If you are a developer with some experience with Spark and want to strengthen your knowledge of how to get around in the world of Spark, then this book is ideal for you. Basic knowledge of Linux, Hadoop and Spark is assumed. Reasonable knowledge of Scala is expected. What You Will Learn Examine Advanced Machine Learning and DeepLearning with MLlib, SparkML, SystemML, H2O and DeepLearning4J Study highly optimised unified batch and real-time data processing using SparkSQL and Structured Streaming Evaluate large-scale Graph Processing and Analysis using GraphX and GraphFrames Apply Apache Spark in Elastic deployments using Jupyter and Zeppelin Notebooks, Docker, Kubernetes and the IBM Cloud Understand internal details of cost based optimizers used in Catalyst, SystemML and GraphFrames Learn how specific parameter settings affect overall performance of an Apache Spark cluster Leverage Scala, R and python for your data science projects In Detail Apache Spark is an in-memory cluster-based parallel processing system that provides a wide range of functionalities such as graph processing, machine learning, stream processing, and SQL. This book aims to take your knowledge of Spark to the next level by teaching you how to expand Spark's functionality and implement your data flows and machine/deep learning programs on top of the platform. The book commences with an overview of the Spark ecosystem. It will introduce you to Project Tungsten and Catalyst, two of the major advancements of Apache Spark 2.x. You will understand how memory management and binary processing, cache-aware computation, and code generation are used to speed things up dramatically. The book extends to show how to incorporate H2O, SystemML, and Deeplearning4j for machine learning, and Jupyter Notebooks and Kubernetes/Docker for cloud-based Spark. During the course of the book, you will learn about the latest enhancements to Apache Spark 2.x, such as interactive querying of live data and unifying DataFrames and Datasets. You will also learn about the updates on the APIs and how DataFrames and Datasets affect SQL, machine learning, graph processing, and streaming. You will learn to use Spark as a big data operating system, understand how to implement advanced analytics on the new APIs, and explore how easy it is to use Spark in day-to-day tasks. Style and approach This book is an extensive guide to Apache Spark modules and tools and shows how Spark's functionality can be extended for real-time processing and storage with worked examples.

Designing Data-Intensive Applications

Data is at the center of many challenges in system design today. Difficult issues need to be figured out, such as scalability, consistency, reliability, efficiency, and maintainability. In addition, we have an overwhelming variety of tools, including

relational databases, NoSQL datastores, stream or batch processors, and message brokers. What are the right choices for your application? How do you make sense of all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann helps you navigate this diverse landscape by examining the pros and cons of various technologies for processing and storing data. Software keeps changing, but the fundamental principles remain the same. With this book, software engineers and architects will learn how to apply those ideas in practice, and how to make full use of data in modern applications. Peer under the hood of the systems you already use, and learn how to use and operate them more effectively. Make informed decisions by identifying the strengths and weaknesses of different tools. Navigate the trade-offs around consistency, scalability, fault tolerance, and complexity. Understand the distributed systems research upon which modern databases are built. Peek behind the scenes of major online services, and learn from their architectures.

Istio: Up and Running

Summary Docker in Practice, Second Edition presents over 100 practical techniques, hand-picked to help you get the most out of Docker. Following a Problem/Solution/Discussion format, you'll walk through specific examples that you can use immediately, and you'll get expert guidance on techniques that you can apply to a whole range of scenarios. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Docker's simple idea-wrapping an application and its dependencies into a single deployable container-created a buzz in the software industry. Now, containers are essential to enterprise infrastructure, and Docker is the undisputed industry standard. So what do you do after you've mastered the basics? To really streamline your applications and transform your dev process, you need relevant examples and experts who can walk you through them. You need this book. About the Book Docker in Practice, Second Edition teaches you rock-solid, tested Docker techniques, such as replacing VMs, enabling microservices architecture, efficient network modeling, offline productivity, and establishing a container-driven continuous delivery process. Following a cookbook-style problem/solution format, you'll explore real-world use cases and learn how to apply the lessons to your own dev projects. What's inside Continuous integration and delivery The Kubernetes orchestration tool Streamlining your cloud workflow Docker in swarm mode Emerging best practices and techniques About the Reader Written for developers and engineers using Docker in production. About the Author Ian Miell and Aidan Hobson Sayers are seasoned infrastructure architects working in the UK. Together, they used Docker to transform DevOps at one of the UK's largest gaming companies. Table of Contents PART 1 - DOCKER FUNDAMENTALS Discovering Docker Understanding Docker: Inside the engine room PART 2 - DOCKER AND DEVELOPMENT Using Docker as a lightweight virtual machine Building images Running containers Day-to-day Docker Configuration management: Getting your house in order PART 3 - DOCKER AND DEVOPS Continuous integration: Speeding up your development pipeline Continuous delivery: A perfect fit for Docker principles Network simulation: Realistic environment testing without the pain PART 4 - ORCHESTRATION FROM A SINGLE MACHINE TO THE CLOUD A primer on container orchestration The data center as an OS with Docker Docker platforms PART 5 - DOCKER IN PRODUCTION Docker and security Plain sailing: Running Docker in

production Docker in production: Dealing with challenges

Managing Kubernetes

A comprehensive introduction to automated application deployment on Kubernetes for beginners Key Features Effectively manage applications deployed in Kubernetes using Helm Learn to install, upgrade, share, and manage applications deployed in Kubernetes Get up and running with a package manager for Kubernetes Book Description Containerization is currently known to be one of the best ways to implement DevOps. While Docker introduced containers and changed the DevOps era, Google developed an extensive container orchestration system, Kubernetes, which is now considered the frontrunner in container orchestration. With the help of this book, you'll explore the efficiency of managing applications running on Kubernetes using Helm. Starting with a short introduction to Helm and how it can benefit the entire container environment, you'll then delve into the architectural aspects, in addition to learning about Helm charts and its use cases. You'll understand how to write Helm charts in order to automate application deployment on Kubernetes. Focused on providing enterprise-ready patterns relating to Helm and automation, the book covers best practices for application development, delivery, and lifecycle management with Helm. By the end of this Kubernetes book, you will have learned how to leverage Helm to develop an enterprise pattern for application delivery. What you will learn Develop an enterprise automation strategy on Kubernetes using Helm Create easily consumable and configurable Helm charts Use Helm in orchestration tooling and Kubernetes operators Explore best practices for application delivery and life cycle management Leverage Helm in a secure and stable manner that is fit for your enterprise Discover the ins and outs of automation with Helm Who this book is for This book is for Kubernetes developers or administrators who are interested in learning Helm to provide automation for application development on Kubernetes. Although no prior knowledge of Helm is required, basic knowledge of Kubernetes application development will be useful.

Docker Deep Dive

Learn how to automate and manage your containers and reduce the overall operation burden on your system. Key Features Use containers to manage, scale and orchestrate apps in your organization Transform the latest concept of Kubernetes 1.10 into examples Expert techniques for orchestrating containers effectively Book Description Kubernetes is an open source orchestration platform to manage containers in a cluster environment. With Kubernetes, you can configure and deploy containerized applications easily. This book gives you a quick brush up on how Kubernetes works with containers, and an overview of main Kubernetes concepts, such as Pods, Deployments, Services and etc. This book explains how to create Kubernetes clusters and run applications with proper authentication and authorization configurations. With real-world recipes, you'll learn how to create high availability Kubernetes clusters on AWS, GCP and in on-premise datacenters with proper logging and monitoring setup. You'll also learn some useful tips about how to build a continuous delivery pipeline for your application. Upon completion of this book, you will be able to use Kubernetes in production and will have a better understanding of how to manage containers

using Kubernetes. What you will learn

- Build your own container cluster
- Deploy and manage highly scalable, containerized applications with Kubernetes
- Build high-availability Kubernetes clusters
- Build a continuous delivery pipeline for your application
- Track metrics and logs for every container running in your cluster
- Streamline the way you deploy and manage your applications with large-scale container orchestration

Who this book is for This book is for system administrators, developers, DevOps engineers, or any stakeholder who wants to understand how Kubernetes works using a recipe-based approach. Basic knowledge of Kubernetes and Containers is required.

Learn Azure in a Month of Lunches, Second Edition

Enhance your skills in building scalable infrastructure for your cloud-based applications

Key Features

- Learn to design a scalable architecture by building continuous integration (CI) pipelines with Kubernetes
- Get an in-depth understanding of role-based access control (RBAC), continuous deployment (CD), and observability
- Monitor a Kubernetes cluster with Prometheus and Grafana

Book 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 learn

- Understand the synergy between Kubernetes and microservices
- Create a complete CI/CD pipeline for your microservices on Kubernetes
- Develop microservices on Kubernetes with the Go kit framework using best practices
- Manage and monitor your system using Kubernetes and open-source tools
- Expose your services through REST and gRPC APIs
- Implement and deploy serverless functions as a service
- Externalize authentication, authorization and traffic shaping using a service mesh
- Run a Kubernetes cluster in the cloud on Google Kubernetes Engine

Who 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.

Kubernetes: Up and Running

Written by the core development team of JHipster and fully updated for JHipster 6, Java 11, and Spring Boot 2.1, this book will show you how to build modern web applications with real-world examples and best practices

Key Features

- Build full stack applications with modern JavaScript frameworks such as Angular, React, and Vue.js
- Explore the JHipster microservices stack, which includes Spring Cloud, Netflix OSS, and the Elastic Stack
- Learn advanced local and cloud deployment strategies using Docker and Kubernetes

Book Description

JHipster is an open source development platform that allows you to easily create web apps and microservices from scratch without spending time on wiring and integrating different technologies. Updated to include JHipster 6, Java 11, Spring Boot 2.1, Vue.js, and Istio, this second edition of Full Stack Development with JHipster will help you build full stack applications and microservices seamlessly. You'll start by understanding JHipster and its associated tools, along with the essentials of full stack development, before building a monolithic web app. You'll then learn the JHipster Domain Language (JDL) with entity modeling using JDL-Studio. With this book, you'll create production-ready web apps using Spring Boot, Spring Framework, Angular, and Bootstrap, and run tests and set up continuous integration pipelines with Jenkins. As you advance, you'll learn how to convert your monoliths to microservices and how to package your application for production with various deployment options, including Heroku and Google Cloud. You'll also learn about Docker and Kubernetes, along with an introduction to the Istio service mesh. Finally, you'll build your client-side with React and Vue.js and discover JHipster's best practices. By the end of the book, you'll be able to leverage the best tools available to build modern web apps.

What you will learn

- Create full stack apps from scratch using the latest features of JHipster 6 and Spring Boot 2.1
- Build business logic by creating and developing entity models using JDL
- Understand how to convert a monolithic architecture into a full-fledged microservices architecture
- Build and package your apps for production using Docker
- Deploy your application to Google Cloud with Kubernetes
- Create continuous integration/continuous delivery pipelines with Jenkins
- Create applications using Angular, React, and Vue.js client-side frameworks

Who this book is for

This book is for full stack developers who want to build web applications and microservices speedily without writing a lot of boilerplate code. If you're a backend developer looking to learn full stack development with JavaScript frameworks and libraries such as Angular, React, and Vue.js, you'll find this book useful. Experience in building Java web applications is required. Some exposure to the Spring Framework would be beneficial but not necessary to get the most out of this book.

DevOps with Kubernetes

Build and deploy scalable cloud applications using Windows containers and Kubernetes

Key Features

- Run, deploy, and orchestrate containers on the Windows platform with this Kubernetes book
- Use Microsoft SQL Server 2019 as a data store to deploy Kubernetes applications written in .NET Framework
- Set up a Kubernetes development environment and deploy clusters with Windows Server 2019 nodes

Book Description

With the adoption of Windows containers in Kubernetes, you can now fully leverage the flexibility and robustness of the Kubernetes container orchestration system in the Windows ecosystem. This support will enable you to create new Windows applications and migrate existing ones to the cloud-native

stack with the same ease as for Linux-oriented cloud applications. This practical guide takes you through the key concepts involved in packaging Windows-distributed applications into containers and orchestrating these using Kubernetes. You'll also understand the current limitations of Windows support in Kubernetes. As you advance, you'll gain hands-on experience deploying a fully functional hybrid Linux/Windows Kubernetes cluster for development, and explore production scenarios in on-premises and cloud environments, such as Microsoft Azure Kubernetes Service. By the end of this book, you'll be well-versed with containerization, microservices architecture, and the critical considerations for running Kubernetes in production environments successfully. What you will learn

- Understand containerization as a packaging format for applications
- Create a development environment for Kubernetes on Windows
- Grasp the key architectural concepts in Kubernetes
- Discover the current limitations of Kubernetes on the Windows platform
- Provision and interact with a Kubernetes cluster from a Windows machine
- Create hybrid Windows Kubernetes clusters in on-premises and cloud environments

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

Architecting for Scale

Understand the Kubernetes ecosystem and learn techniques to run fault-tolerant, scalable applications

- Key Features* Gain insight into the inner workings of Kubernetes
- * Learn how to deploy and manage applications on Kubernetes
- * Explore ways to build and secure Kubernetes clusters

Book Description Kubernetes is the leading orchestrator of cloud-native apps. With knowledge of how to work with Kubernetes, you can easily deploy and manage applications on the cloud or in your on-premises data center. The book begins by introducing you to Kubernetes and showing you how to install it. You'll learn how to use Kubernetes Services and bring stable and reliable networking to apps that are deployed on Kubernetes. You'll delve deep into the powerful storage subsystem of Kubernetes and learn how to leverage the variety of external storage backends in your applications. As the book progresses, it shows you how to use features such as DaemonSets, Helm, and RBAC to enhance your Kubernetes applications. You'll explore the six categories of identifying vulnerabilities and look at a few ways to prevent and mitigate them. You'll also look at ways to secure the software delivery pipeline by discussing some image-related best practices. The book ends by sharing with you some resources that'll help take your Kubernetes knowledge to the next level.

By the end of the book, you'll have the confidence and skills to leverage all the features of Kubernetes to develop scalable applications.

- What you will learn* Explore cluster-level and node-level isolation and runtime isolation options
- * Use Kubernetes Deployments for self-healing, scaling, and updating apps
- * Manage Kubernetes clusters with kubectl
- * Write a Container Storage Interface (CSI) plugin to work across multiple orchestrators
- * Use Kubernetes features such as Jobs and CronJobs in your apps
- * Identify vulnerabilities and learn measures to prevent and mitigate them

Who this book is for If you want to be more comfortable using Kubernetes to orchestrate your containerized applications, this is the ideal book for you. To easily grasp the concepts explained in this book, you must be familiar with Docker and

containers.

Kubernetes for Full-Stack Developers

Feb 2018. This is the ultimate book for learning Docker, brought to you by Docker Captain and leading educator in the container ecosystem Nigel Poulton.

Kubernetes in Action

Schedule and run application containers using Kubernetes Key Features Get to grips with a wide range of tools to monitor and secure your deployments Manage your container clusters and networks using Kubernetes Get well-versed with the fundamentals of Kubernetes Book Description Kubernetes has continued to grow and achieve broad adoption across various industries, helping you to orchestrate and automate container deployments on a massive scale. Based on the recent release of Kubernetes 1.12, Getting Started with Kubernetes gives you a complete understanding of how to install a Kubernetes cluster. The book focuses on core Kubernetes constructs, such as pods, services, replica sets, replication controllers, and labels. You will understand cluster-level networking in Kubernetes, and learn to set up external access to applications running in the cluster. As you make your way through the book, you'll understand how to manage deployments and perform updates with minimal downtime. In addition to this, you will explore operational aspects of Kubernetes , such as monitoring and logging, later moving on to advanced concepts such as container security and cluster federation. You'll get to grips with integrating your build pipeline and deployments within a Kubernetes cluster, and be able to understand and interact with open source projects. In the concluding chapters, you'll orchestrate updates behind the scenes, avoid downtime on your cluster, and deal with underlying cloud provider instability within your cluster. By the end of this book, you'll have a complete understanding of the Kubernetes platform and will start deploying applications on it. What you will learn Download, install, and configure the Kubernetes code base Set up and access monitoring and logging for Kubernetes clusters Set up external access to applications running in the cluster Learn how to manage and scale kubernetes with hosted platforms on AWS, Azure, and GCP Run multiple clusters and manage them from a single control plane Discover top tools for deploying and managing a Kubernetes cluster Learn how to get production ready and harden Kubernetes operations, networking, and storage Who this book is for Getting Started with Kubernetes is for developers, system administrators, and DevOps engineers who want to automate the deployment process and scale their applications. No prior knowledge of Kubernetes is required.

Kubernetes Cookbook

If you're looking to develop native applications in Kubernetes, this is your guide. Developers and AppOps administrators will learn how to build Kubernetes-native applications that interact directly with the API server to query or update the state of resources. AWS developer advocate Michael Hausenblas and Red Hat principal software engineer Stefan Schimanski explain the characteristics of these apps and show you how to program Kubernetes to build them. You'll explore the basic

building blocks of Kubernetes, including the client-go API library and custom resources. All you need to get started is a rudimentary understanding of development and system administration tools and practices, such as package management, the Go programming language, and Git. Walk through Kubernetes API basics and dive into the server's inner structure Explore Kubernetes's programming interface in Go, including Kubernetes API objects Learn about custom resources—the central extension tools used in the Kubernetes ecosystem Use tags to control Kubernetes code generators for custom resources Write custom controllers and operators and make them production ready Extend the Kubernetes API surface by implementing a custom API server

Getting Started with Kubernetes

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

Docker in Practice

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. Running multi-container apps with Docker Compose 8. Supporting reliability with health checks and dependency checks 9. Adding observability with containerized monitoring 10. Running multiple environments with Docker Compose 11. Building and testing applications with Docker and Docker Compose PART 3 - RUNNING AT SCALE WITH A CONTAINER ORCHESTRATOR 12. Understanding orchestration: Docker Swarm and Kubernetes 13. Deploying distributed applications as stacks in Docker Swarm 14. Automating releases with upgrades and rollbacks 15. Configuring Docker for secure remote access and CI/CD 16. Building Docker images that run anywhere: Linux, Windows, Intel, and Arm PART 4 - GETTING YOUR CONTAINERS READY FOR PRODUCTION 17. Optimizing your Docker images for size, speed, and security 18. Application configuration management in containers 19. Writing and managing application logs with Docker 20. Controlling HTTP traffic to containers with a reverse proxy 21. Asynchronous communication with a message queue 22. Never the end

Learn Kubernetes - Container orchestration using Docker

Learn how to schedule and run application containers using Kubernetes. About This Book Get well-versed with the fundamentals of Kubernetes and get it production-ready for deployments Confidently manage your container clusters and networks using Kubernetes This practical guide will show you container application examples throughout to illustrate the concepts and features of Kubernetes Who This Book Is For This book is for developers, sys admins, and DevOps engineers who want to automate the deployment process and scale their applications. You do not need any knowledge about Kubernetes. What You Will Learn Download, install, and configure the Kubernetes codebase Understand the core concepts of a Kubernetes cluster Be able to set up and access monitoring and logging for Kubernetes clusters Set up external access to applications running in the cluster Understand how CoreOS and Kubernetes can help you achieve greater performance and container implementation agility Run multiple clusters and manage from a single control plane Explore container security as well as securing Kubernetes clusters Work with third-party extensions and tools In Detail Kubernetes has continued to grow and achieve broad adoption across various industries, helping you to orchestrate and automate container deployments on a massive scale. This book will give you a complete understanding of Kubernetes and how to get a cluster up and running. You will develop an understanding of the installation and configuration process. The book will then focus on the core Kubernetes constructs such as pods, services, replica sets, replication controllers, and labels. You will also understand how cluster level networking is done in Kubernetes. The book will also

show you how to manage deployments and perform updates with minimal downtime. Additionally, you will learn about operational aspects of Kubernetes such as monitoring and logging. Advanced concepts such as container security and cluster federation will also be covered. Finally, you will learn about the wider Kubernetes ecosystem with OCP, CoreOS, and Tectonic and explore the third-party extensions and tools that can be used with Kubernetes. By the end of the book, you will have a complete understanding of the Kubernetes platform and will start deploying applications on it. Style and approach This straightforward guide will help you understand how to move your container applications into production through best practices and a step-by-step walkthrough tied to real-world operational strategies.

Terraform: Up & Running

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

Learn Helm

Summary Kubernetes in Action is a comprehensive guide to effectively developing and running applications in a Kubernetes environment. Before diving into Kubernetes, the book gives an overview of container technologies like Docker, including how to build containers, so that even readers who haven't used these technologies before can get up and running. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Kubernetes is Greek for "helmsman," your guide through unknown waters. The Kubernetes container orchestration system safely manages the structure and flow of a distributed application, organizing containers and services for maximum efficiency. Kubernetes serves as an operating system for your clusters, eliminating the need to factor the underlying network and server infrastructure into your designs. About the Book Kubernetes in Action teaches you to use Kubernetes to deploy container-based distributed applications. You'll start with an overview of Docker and Kubernetes before building your first Kubernetes cluster. You'll gradually expand your initial application, adding features and deepening your knowledge of Kubernetes architecture and operation. As you navigate this comprehensive guide, you'll explore high-value topics like

monitoring, tuning, and scaling. What's Inside Kubernetes' internals Deploying containers across a cluster Securing clusters Updating applications with zero downtime About the Reader Written for intermediate software developers with little or no familiarity with Docker or container orchestration systems. About the Author Marko Luksa is an engineer at Red Hat working on Kubernetes and OpenShift. Table of Contents PART 1 - OVERVIEW Introducing Kubernetes First steps with Docker and Kubernetes PART 2 - CORE CONCEPTS Pods: running containers in Kubernetes Replication and other controllers: deploying managed pods Services: enabling clients to discover and talk to pods Volumes: attaching disk storage to containers ConfigMaps and Secrets: configuring applications Accessing pod metadata and other resources from applications Deployments: updating applications declaratively StatefulSets: deploying replicated stateful applications PART 3 - BEYOND THE BASICS Understanding Kubernetes internals Securing the Kubernetes API server Securing cluster nodes and the network Managing pods' computational resources Automatic scaling of pods and cluster nodes Advanced scheduling Best practices for developing apps Extending Kubernetes

The Docker Book

Terraform has become a key player in the DevOps world for defining, launching, and managing infrastructure as code (IaC) across a variety of cloud and virtualization platforms, including AWS, Google Cloud, Azure, and more. This hands-on second edition, expanded and thoroughly updated for Terraform version 0.12 and beyond, shows you the fastest way to get up and running. Gruntwork cofounder Yevgeniy (Jim) Brikman walks you through code examples that demonstrate Terraform's simple, declarative programming language for deploying and managing infrastructure with a few commands. Veteran sysadmins, DevOps engineers, and novice developers will quickly go from Terraform basics to running a full stack that can support a massive amount of traffic and a large team of developers. Explore changes from Terraform 0.9 through 0.12, including backends, workspaces, and first-class expressions Learn how to write production-grade Terraform modules Dive into manual and automated testing for Terraform code Compare Terraform to Chef, Puppet, Ansible, CloudFormation, and Salt Stack Deploy server clusters, load balancers, and databases Use Terraform to manage the state of your infrastructure Create reusable infrastructure with Terraform modules Use advanced Terraform syntax to achieve zero-downtime deployment

The The Kubernetes Workshop

Kubernetes is one of the most popular, sophisticated, and fast-evolving container orchestrators. In this book, you'll learn the essentials and find out about the advanced administration and orchestration techniques in Kubernetes. Readers will also learn to manage containers using the latest version of Kubernetes with a recipe-based approach.

Kubernetes Cookbook

Learn how to automate and manage your Linux containers and improve the overall

performance of your system About This Book Are you using containers in your organization and want to better manage, scale, and orchestrate apps on the container? Use the recipes in the book to find a reliable solution from experts This is the first and only book on the market on Kubernetes, and it will show how to manage your containers in production using Kubernetes Buy this book, simply follow the recipes, and you will be the master of your Linux containers Who This Book Is For The book is aimed at system administrators who have intermediate level of knowledge with Kubernetes and want to better manage their applications deployed over containers. Also, it will help those administrators who want to maintain and scale applications on these containers. What You Will Learn Get to know how to build your own container cluster Deploy and manage highly scalable applications using Kubernetes Discover how to build high availability Kubernetes clusters Find out how to build a continuous delivery pipeline for your application Track metrics and logs for every container running in your cluster Streamline the way you deploy and manage your applications with large-scale container orchestration In Detail Kubernetes is Google's solution to managing a cluster of containers. Kubernetes provides a declarative API to manage clusters while giving us a lot of flexibility. This book will provide you with recipes to better manage containers in different scenarios in production using Kubernetes. We will start by giving you a quick brush up on how Kubernetes works with containers along with an overview of the main Kubernetes features such as Pods, Replication Controllers, and more. Next, we will teach you how to create Kubernetes cluster and how to run programs on Kubernetes. We'll explain features such as High Availability Kubernetes master setup, using Kubernetes with Docker, and orchestration with Kubernetes using AWS. Later, will show you how to use Kubernetes-UI, and how to set up and manage Kubernetes clusters on the cloud and bare metal. Upon completion of this book, you will be able use Kubernetes in production and will have a better understanding of how to manage your containers using Kubernetes. Style and approach This recipe-based book precisely teaches you how to use Kubernetes in production and how to better manage your containers using Kubernetes.

Kubernetes Patterns

Learn Azure in a Month of Lunches, Second Edition, is a tutorial on writing, deploying, and running applications in Azure. In it, you'll work through 21 short lessons that give you real-world experience. Each lesson includes a hands-on lab so you can try out and lock in your new skills. Summary You can be incredibly productive with Azure without mastering every feature, function, and service. Learn Azure in a Month of Lunches, Second Edition gets you up and running quickly, teaching you the most important concepts and tasks in 21 practical bite-sized lessons. As you explore the examples, exercises, and labs, you'll pick up valuable skills immediately and take your first steps to Azure mastery! This fully revised new edition covers core changes to the Azure UI, new Azure features, Azure containers, and the upgraded Azure Kubernetes Service. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Microsoft Azure is vast and powerful, offering virtual servers, application templates, and prebuilt services for everything from data storage to AI. To navigate it all, you need a trustworthy guide. In this book, Microsoft engineer and Azure trainer Iain Foulds focuses on core skills for creating

cloud-based applications. About the book *Learn Azure in a Month of Lunches, Second Edition*, is a tutorial on writing, deploying, and running applications in Azure. In it, you'll work through 21 short lessons that give you real-world experience. Each lesson includes a hands-on lab so you can try out and lock in your new skills. What's inside *Understanding Azure beyond point-and-click*
Securing applications and data Automating your environment Azure services for machine learning, containers, and more About the reader This book is for readers who can write and deploy simple web or client/server applications. About the author *Iain Foulds* is an engineer and senior content developer with Microsoft.
Table of Contents PART 1 - AZURE CORE SERVICES 1 Before you begin 2 Creating a virtual machine 3 Azure Web Apps 4 Introduction to Azure Storage 5 Azure Networking basics PART 2 - HIGH AVAILABILITY AND SCALE 6 Azure Resource Manager 7 High availability and redundancy 8 Load-balancing applications 9 Applications that scale 10 Global databases with Cosmos DB 11 Managing network traffic and routing 12 Monitoring and troubleshooting PART 3 - SECURE BY DEFAULT 13 Backup, recovery, and replication 14 Data encryption 15 Securing information with Azure Key Vault 16 Azure Security Center and updates PART 4 - THE COOL STUFF 17 Machine learning and artificial intelligence 18 Azure Automation 19 Azure containers 20 Azure and the Internet of Things 21 Serverless computing

Kubernetes Operators

Every day, companies struggle to scale critical applications. As traffic volume and data demands increase, these applications become more complicated and brittle, exposing risks and compromising availability. This practical guide shows IT, devops, and system reliability managers how to prevent an application from becoming slow, inconsistent, or downright unavailable as it grows. Scaling isn't just about handling more users; it's also about managing risk and ensuring availability. Author *Lee Atchison* provides basic techniques for building applications that can handle huge quantities of traffic, data, and demand without affecting the quality your customers expect. In five parts, this book explores: Availability: learn techniques for building highly available applications, and for tracking and improving availability going forward Risk management: identify, mitigate, and manage risks in your application, test your recovery/disaster plans, and build out systems that contain fewer risks Services and microservices: understand the value of services for building complicated applications that need to operate at higher scale Scaling applications: assign services to specific teams, label the criticalness of each service, and devise failure scenarios and recovery plans Cloud services: understand the structure of cloud-based services, resource allocation, and service distribution

Introducing Azure Kubernetes Service

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.

Kubernetes

Operators are a way of packaging, deploying, and managing Kubernetes applications. A Kubernetes application doesn't just run on Kubernetes; it's composed and managed in Kubernetes terms. Operators add application-specific operational knowledge to a Kubernetes cluster, making it easier to automate complex, stateful applications and to augment the platform. Operators can coordinate application upgrades seamlessly, react to failures automatically, and streamline repetitive maintenance like backups. Think of Operators as site reliability engineers in software. They work by extending the Kubernetes control plane and API, helping systems integrators, cluster administrators, and application developers reliably deploy and manage key services and components. Using real-world examples, authors Jason Dobies and Joshua Wood demonstrate how to use Operators today and how to create Operators for your applications with the Operator Framework and SDK. Learn how to establish a Kubernetes cluster and deploy an Operator Examine a range of Operators from usage to implementation Explore the three pillars of the Operator Framework: the Operator SDK, the Operator Lifecycle Manager, and Operator Metering Build Operators from the ground up using the Operator SDK Build, package, and run an Operator in development, testing, and production phases Learn how to distribute your Operator for installation on Kubernetes clusters

Cloud Native DevOps with Kubernetes

Learn to implement DevOps using Docker & Kubernetes. About This Book Learning DevOps, container, and Kubernetes within one book. Leverage Kubernetes as a platform to deploy, scale, and run containers efficiently. A practical guide towards container management and orchestration Who This Book Is For This book is targeted for anyone, who wants to learn containerization and clustering in a practical way using Kubernetes. No prerequisite skills required, however, essential DevOps skill and public/private Cloud knowledge will accelerate the reading speed. If you're advanced readers, you can also get a deeper understanding of all the tools and technique described in the book. What You Will Learn Learn fundamental and advanced DevOps skills and tools Get a comprehensive understanding for container Learn how to move your application to container world Learn how to manipulate your application by Kubernetes Learn how to work with Kubernetes in popular public cloud Improve time to market with Kubernetes and Continuous

Delivery Learn how to monitor, log, and troubleshoot your application with Kubernetes In Detail Containerization is said to be the best way to implement DevOps. Google developed Kubernetes, which orchestrates containers efficiently and is considered the frontrunner in container orchestration. Kubernetes is an orchestrator that creates and manages your containers on clusters of servers. This book will guide you from simply deploying a container to administrate a Kubernetes cluster, and then you will learn how to do monitoring, logging, and continuous deployment in DevOps. The initial stages of the book will introduce the fundamental DevOps and the concept of containers. It will move on to how to containerize applications and deploy them into. The book will then introduce networks in Kubernetes. We then move on to advanced DevOps skills such as monitoring, logging, and continuous deployment in Kubernetes. It will proceed to introduce permission control for Kubernetes resources via attribute-based access control and role-based access control. The final stage of the book will cover deploying and managing your container clusters on the popular public cloud Amazon Web Services and Google Cloud Platform. At the end of the book, other orchestration frameworks, such as Docker Swarm mode, Amazon ECS, and Apache Mesos will be discussed. Style and approach Readers will be taken through fundamental DevOps skills and Kubernetes concept and administration with detailed examples. It introduces comprehensive DevOps topics, including microservices, automation tools, containers, monitoring, logging, continuous delivery, and popular public cloud environments. At each step readers will learn how to leverage Kubernetes in their everyday lives and transform their original delivery pipeline for fast and efficient delivery.

Kubernetes for Developers

Use this beginner's guide to understand and work with Kubernetes on the Google Cloud Platform and go from single monolithic Pods (the smallest unit deployed and managed by Kubernetes) all the way up to distributed, fault-tolerant stateful backing stores. You need only a familiarity with Linux, Bash, and Python to successfully use this book. Proficiency in Docker or cloud technology is not required. You will follow a learn-by-doing approach, running small experiments and observing the effects. Google open sourced Kubernetes in 2015 and now it is the industry standard in container orchestration. It has been adopted by all leading vendors of cloud, on-prem, and hybrid infrastructure services: Microsoft (Azure AKS), Amazon (AWS EKS), IBM (IBM Cloud Kubernetes Services), Alibaba Cloud (ACK), RedHat (OpenShift), and Pivotal (PKS). Even though Kubernetes is offered by all of the market-leading cloud providers, the Google Cloud Platform (GCP) offers an integrated shell (Google Cloud Shell) and a \$300 credit to get started, which makes it the ideal platform to not only learn Kubernetes but also to implement final production workloads. What You Will Learn Set up a Kubernetes cluster in GCP Deploy simple Docker images using monolithic Pods Arrange highly available and highly scalable applications using Deployments Achieve zero-downtime deployments using the Service controller Externalize configuration using ConfigMaps and Secrets Set up batch processes and recurrent tasks using Jobs and CronJobs Install horizontal (sidecar pattern) services using DaemonSets Implement distributed, stateful backing stores using StatefulSets Who This Book Is For Beginners with basic Linux admin and scripting skills (Bash and Python). Proficiency with Docker is not required as all examples in the book use off-the-shelf

public images from Docker Hub.

Learn Docker in a Month of Lunches

Kubernetes is becoming the de-facto standard for container orchestration and distributed applications management across a microservices framework. With this practical cookbook, you'll learn hands-on recipes for automating the deployment, scaling, and operations of application containers across clusters of hosts. The book's easy-lookup problem-solution-discussion format helps you find the detailed answers you need—quickly. Kubernetes lets you deploy your applications quickly and predictably, so you can efficiently respond to customer demand. This cookbook, ideal for developers and system administrators alike, provides the essential knowledge you need to get there. You'll find recipes for: Kubernetes installation Kubernetes API, API groups Application primitives Monitoring Troubleshooting

Beginning Kubernetes on the Google Cloud Platform

This book is for anyone who needs to run software on Kubernetes. Whether you're a developer, a DevOps manager or a technician, this book should help you plan and run Kubernetes workloads. I assume that you have no previous knowledge about containers or containers orchestration. I made my best to keep this book small, so that you can learn Kubernetes quickly without getting lost in petty details. If you are looking for a reference book where you'll find answers to all the questions you may have within the next 4 years of your Kubernetes practice, you'll find other heavy books for that. My purpose is to swiftly provide you with the tools you need to create and run your first cloud-ready application using Kubernetes, then be able to look for more by yourself when needed. Plus this book is packed with exercises and samples where you create, run and manage your own applications on a Kubernetes cluster. Read this book, and you can create and run your first Kubernetes application within a week.

Getting Started with Kubernetes

Go from zero to sixty deploying and running a Kubernetes cluster on Microsoft Azure! This hands-on practical guide to Microsoft's Azure Kubernetes Service (AKS), a managed container orchestration platform, arms you with the tools and knowledge you need to easily deploy and operate on this complex platform. Take a journey inside Docker containers, container registries, Kubernetes architecture, Kubernetes components, and core Kubectl commands. Drawing on hard-earned experience in the field, the authors provide just enough theory to help you grasp important concepts, teaching the practical straightforward knowledge you need to start running your own AKS cluster. You will dive into topics related to the deployment and operation of AKS, including Rancher for management, security, networking, storage, monitoring, backup, scaling, identity, package management with HELM, and AKS in CI/CD. What You Will Learn Develop core knowledge of Docker containers, registries, and Kubernetes Gain AKS skills for Microsoft's fastest growing services in the cloud Understand the pros and cons of deploying and operating AKS Deploy and manage applications on the AKS platform Use AKS

within a DevOps CI/CD process Who This Book Is For IT professionals who work with DevOps, the cloud, Docker, networking, storage, Linux, or Windows. Experience with cloud, DevOps, Docker, or application development is helpful.

Full Stack Development with JHipster

Kubernetes is the operating system of the cloud-native world, providing a reliable and scalable platform for running containerized workloads. This book shows developers and operations staff how to apply industry-standard DevOps practices to Kubernetes in a cloud-native context. You'll learn all about the Kubernetes ecosystem and discover battle-tested solutions to everyday problems. 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 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 Design your own cloud-native services and infrastructure 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 observability and monitoring Secure your containers and clusters in production Adopt DevOps principles to help make your development teams lean, fast, and effective

Kubernetes Microservices with Docker

A developer's field-guide to designing scalable services using Kubernetes Key Features Develop and run your software using containers within a Kubernetes environment Get hands-on experience of using Kubernetes with DevOps concepts such as continuous integration, benchmark testing, monitoring, and so on Pragmatic example-based approach showing how to use Kubernetes in the development process Book Description Kubernetes is documented and typically approached from the perspective of someone running software that has already been built. Kubernetes may also be used to enhance the development process, enabling more consistent testing and analysis of code to help developers verify not only its correctness, but also its efficiency. This book introduces key Kubernetes concepts, coupled with examples of how to deploy and use them with a bit of Node.js and Python example code, so that you can quickly replicate and use that knowledge. You will begin by setting up Kubernetes to help you develop and package your code. We walk you through the setup and installation process before working with Kubernetes in the development environment. We then delve into concepts such as automating your build process, autonomic computing, debugging, and integration testing. This book covers all the concepts required for a developer to work with Kubernetes. By the end of this book, you will be in a position to use Kubernetes in development ecosystems. What you will learn Build your software into containers Deploy and debug software running in containers within Kubernetes Declare and add configuration through Kubernetes Define how your application fits together, using internal and external services Add feedback to your code to help Kubernetes manage your services Monitor and measure your

services through integration testing and in production deployments Who this book is for If you are a full-stack or back-end software developers interested, curious, or being asked to test as well as run the code you're creating, you can leverage Kubernetes to make that process simpler and consistent regardless of where you deploy. If you're looking for developer focused examples in NodeJS and Python for how to build, test, deploy, and run your code with Kubernetes, this is perfect for you.

Kubernetes Cookbook

Updated for Docker Community Edition v18.09! Docker book designed for SysAdmins, SREs, Operations staff, Developers and DevOps who are interested in deploying the open source container service Docker. In this book, we'll walk you through installing, deploying, managing, and extending Docker. We're going to do that by first introducing you to the basics of Docker and its components. Then we'll start to use Docker to build containers and services to perform a variety of tasks. We're going to take you through the development lifecycle, from testing to production, and see where Docker fits in and how it can make your life easier. We'll make use of Docker to build test environments for new projects, demonstrate how to integrate Docker with continuous integration workflow, and then how to build application services and platforms. Finally, we'll show you how to use Docker's API and how to extend Docker yourself. We'll teach you how to: * Install Docker. * Take your first steps with a Docker container. * Build Docker images. * Manage and share Docker images. * Run and manage more complex Docker containers. * Deploy Docker containers as part of your testing pipeline. * Build multi-container applications and environments. * Learn about orchestration using Compose and Swarm for the orchestration of Docker containers and Consul for service discovery. * Explore the Docker API. * Getting Help and Extending Docker.

Kubernetes - A Complete DevOps Cookbook

Start using Kubernetes in complex big data and enterprise applications, including Docker containers. Starting with installing Kubernetes on a single node, the book introduces Kubernetes with a simple Hello example and discusses using environment variables in Kubernetes. Next, Kubernetes Microservices with Docker discusses using Kubernetes with all major groups of technologies such as relational databases, NoSQL databases, and in the Apache Hadoop ecosystem. The book concludes with using multi container pods and installing Kubernetes on a multi node cluster. /div "a concise but clear introduction to containers, Docker and Kubernetes, using simple real-world examples to pass on the core concepts, via repetition, and is a very useful enabler." 10/10 Dave Hay MBCS CITP: review for BCS, The Chartered Institute for IT (<http://www.bcs.org/content/conWebDoc/58512>) What You Will Learn Install Kubernetes on a single node Set environment variables Create multi-container pods using Docker Use volumes Use Kubernetes with the Apache Hadoop ecosystem, NoSQL databases, and RDBMSs Install Kubernetes on a multi-node cluster Who This Book Is For Application developers including Apache Hadoop developers, database developers and NoSQL developers.

Container Security

To facilitate scalability and resilience, many organizations now run applications in cloud native environments using containers and orchestration. But how do you know if the deployment is secure? This practical book examines key underlying technologies to help developers, operators, and security professionals assess security risks and determine appropriate solutions. Author Liz Rice, VP of open source engineering at Aqua Security, looks at how the building blocks commonly used in container-based systems are constructed in Linux. You'll understand what's happening when you deploy containers and learn how to assess potential security risks that could affect your deployments. If you run container applications with kubectl or docker and use Linux command-line tools such as ps and grep, you're ready to get started. Explore attack vectors that affect container deployments Dive into the Linux constructs that underpin containers Examine measures for hardening containers Understand how misconfigurations can compromise container isolation Learn best practices for building container images Identify container images that have known software vulnerabilities Leverage secure connections between containers Use security tooling to prevent attacks on your deployment

Hands-On Kubernetes on Windows

Kubernetes radically changes the way applications are built and deployed in the cloud. Since its introduction in 2014, this container orchestrator has become one of the largest and most popular open source projects in the world. The updated edition of this practical book shows developers and ops personnel how Kubernetes and container technology can help you achieve new levels of velocity, agility, reliability, and efficiency. Kelsey Hightower, Brendan Burns, and Joe Beda—who've worked on Kubernetes at Google and beyond—explain how this system fits into the lifecycle of a distributed application. You'll learn how to use tools and APIs to automate scalable distributed systems, whether it's for online services, machine learning applications, or a cluster of Raspberry Pi computers. Create a simple cluster to learn how Kubernetes works Dive into the details of deploying an application using Kubernetes Learn specialized objects in Kubernetes, such as DaemonSets, jobs, ConfigMaps, and secrets Explore deployments that tie together the lifecycle of a complete application Get practical examples of how to develop and deploy real-world applications in Kubernetes

The Kubernetes Book

This workshop takes you through a Kubernetes-oriented application delivery pipeline in a practical way. You'll learn how to manage containers efficiently and scale and stabilize cloud-native applications using Kubernetes.

Programming Kubernetes

In this practical guide, four Kubernetes professionals with deep experience in distributed systems, enterprise application development, and open source will guide you through the process of building applications with this container orchestration system. Based on the experiences of companies that are running Kubernetes in production successfully, many of the methods are also backed by

concrete code examples. This book is ideal for those already familiar with basic Kubernetes concepts who want to learn common best practices. You'll learn exactly what you need to know to build your best app with Kubernetes the first time. Set up and develop applications in Kubernetes Learn patterns for monitoring, securing your systems, and managing upgrades, rollouts, and rollbacks Understand Kubernetes networking policies and where service mesh fits in Integrate services and legacy applications and develop higher-level platforms on top of Kubernetes Run machine learning workloads in Kubernetes

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