

Basics Of Kubernetes

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Kubernetes - Craig Berg 2020-06-11

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!

Docker & Kubernetes Fundamentals - Ajay Kumar 2019-09-07

Docker and Kubernetes are changing the way you build, ship, and manage your applications. In this book Docker and Kubernetes Fundamentals, you will learn the fundamentals of Docker and Kubernetes. First, you will learn the basics of what a container is and how it enables cloud-

native application designs. Next, you will explore the roles of Docker and Kubernetes, as well as the basics of how they work. Finally, you will discover how to prepare yourself and your organization to thrive in a container world. When you are finished with the book you will have everything you need to take your container journey to the next level.

Mastering Kubernetes - Gigi Sayfan
2020-06-30

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.

Learn Docker - Fundamentals of Docker 18.x - Gabriel N. Schenker 2018-04-26

Enhance your software deployment workflow using containers

Key Features

- Get up-and-running with basic to advanced concepts of Docker
- Get acquainted with concepts such as Docker containers, Docker images, orchestrators and so on.
- Practical test-based approach to learning a prominent containerization tool

Book Description Docker containers have revolutionized the software supply chain in small and big enterprises. Never before has a new technology so rapidly penetrated the top 500 enterprises worldwide. Companies that embrace containers and containerize their traditional mission-critical applications have reported savings of at least 50% in total maintenance cost and a reduction of 90% (or more) of the time required to deploy new versions of those applications. Furthermore they are benefitting from increased security just by using containers as opposed to running applications outside containers. This book starts from scratch, introducing you to Docker fundamentals and setting up an environment to work with it. Then we delve into concepts such as Docker containers, Docker images, Docker Compose, and so on. We will also cover the concepts of deployment, orchestration, networking, and security. Furthermore, we explain Docker functionalities on public clouds such as AWS. By the end of this book, you will have hands-on experience working with Docker containers and orchestrators such as SwarmKit and Kubernetes. What you will learn- Containerize your

traditional or microservice-based application

- Share or ship your application as an immutable container image
- Build a Docker swarm and a Kubernetes cluster in the cloud
- Run a highly distributed application using Docker Swarm or Kubernetes
- Update or rollback a distributed application with zero downtime
- Secure your applications via encapsulation, networks, and secrets
- Know your options when deploying your containerized app into the cloud

Who this book is for This book is targeted at system administrators, operations engineers, DevOps engineers, and developers or stakeholders who are interested in getting started with Docker from scratch. No prior experience with Docker Containers is required.

Quick Start Kubernetes - Nigel Poulton
2021-01-15

Do you need to figure out what Kubernetes is all about? Do you like learning through hands-on? If yes, this is the book for you... Quick Start Kubernetes, brought to you by best-selling author Nigel Poulton, assumes zero prior experience and gets you to the point you can hold deploy and manage a simple app. And it does it in less than 100 pages! You'll learn: - Why we have Kubernetes - What Kubernetes is - Where Kubernetes is going - The fundamentals of Kubernetes architecture You'll also perform the following hands-on tasks: - Build a cluster - containerize an app - Deploy the app to Kubernetes - Break the app and watch it self-heal - Scale the app - Perform a rolling update Along the way, Nigel explains everything as clearly as possible and busts every piece of jargon. When you're done, you'll be in love with Kubernetes and ready to use your skills in the real world.

Programming Kubernetes - Michael Hausenblas
2019-07-18

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

Kubernetes in Action - Marko Luksa
2017-12-14

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

From Containers to Kubernetes with Node.js - Kathleen Juell 2020-05-08

This book is designed to introduce you to using containers and Kubernetes for full-stack development. You'll learn how to develop a full-stack application using Node.js and MongoDB and how to and manage them using Docker, then Docker Compose, and finally Kubernetes.

Basics of Kubernetes - George Sammons 2017-05-17

This is a guide for you on how to use Kubernetes. It begins by guiding you on how to get started with Kubernetes by installing it in a machine which is running Linux. You are also guided on how to do any necessary setup and configuration after the installation has been completed. You are then guided on how to initialize the master once the installation is complete. The book also explains you on how to install the pod add-on. This is the add-on which facilitates communication between the various nodes contained in the cluster, and it has to be installed before any application is added. In a Kubernetes cluster, nodes may be joined together. This book teaches you how to do this in the easiest way. Once a cluster has been setup,

you may want to connect to it, maybe from your laptop. This book shows you how to do this. You will also learn how to establish a connection to the API server. In Kubernetes, customers need to receive services continuously without or with minimal disruptions. This book guides you on how to do zero downtime deployments in Kubernetes. Container draining, which will help you prevent the killing of the containing as processing of requests is being done. The Http Keep-Alive process is also explored. This is implemented by the addition of a proxy tier for terminating HTTP connections. The book then guides you on how to create Kubernetes deployments in YAML. You will learn how to use Kubernetes for creation of a Pod and then a deployment. Auto-scaling is an important feature in any container, including Kubernetes. This book guides you on how to use Supergiant so as to auto-scale a Kubernetes cluster on DigitalOcean. The following topics are discussed in this book: - Installing Kubernetes on Linux - Zero Downtime Deployments in Kuberentes - Creating a Kubernetes Deployment in YAML - Auto-Scaling Kubernetes *KUBERNETES - BASICS AND BEYOND - FOURTH EDITION* - GIGI. SAYFAN 2023

Cloud Native DevOps with Kubernetes - John Arundel 2019-03-08

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

The Kubernetes Book - Nigel Poulton 2021-04-06
April 2021 edition. Brought to you by best-selling author and video trainer, Nigel Poulton. Every page and every example has been checked and updated against the latest versions of Kubernetes (1.20+) and the latest trends in the cloud-native ecosystem. Containers have revolutionized the way we package and run applications. However, like most things, containers come with a bunch of challenges. This is where Kubernetes comes into play. Kubernetes helps you deploy and manage containerized applications at scale. It also abstracts the underlying infrastructure so that you don't need to care if you're deploying applications to Amazon Web Services, Microsoft Azure, or your own on-premises datacenter. With Kubernetes, you can develop applications on your laptop, deploy to your favourite cloud platform, migrate to a different cloud platform, and even migrate to your on-premises datacenters. The Kubernetes Book starts from the beginning, explains all concepts in a clear and friendly way, and covers everything you need to become proficient at Kubernetes. You'll learn: - Kubernetes architecture - How to build Kubernetes - How to deploy, self-heal, scale, and perform rolling updates on applications - What the Kubernetes API is and how it works - How to secure Kubernetes - The meaning of terms such as; cloud-native, microservices, desired state, containerized, and more... Finally, Kubernetes and cloud technologies are developing fast! That's why this book will be updated every year, meaning it's always up-to-date with the latest versions of Kubernetes and the latest trends in the cloud-native ecosystem.

Kubernetes for Full-Stack Developers - 2020-02-04

This book is designed to help newcomers and experienced users alike learn about Kubernetes. Its chapters are designed to introduce core Kubernetes concepts and to build on them to a level where running an application on a production cluster is a familiar, repeatable, and

automated process. From there, more advanced topics are introduced, like how to manage a Kubernetes cluster itself.

Learn Kubernetes in a Month of Lunches - Elton Stoneman 2021-02-10

Learn Kubernetes in a Month of Lunches is your guide to getting up and running with Kubernetes. Summary In Learn Kubernetes in a Month of Lunches you'll go from "what's a Pod?" to automatically scaling clusters of containers and components in just 22 hands-on lessons, each short enough to fit into a lunch break. Every lesson is task-focused and covers an essential skill on the road to Kubernetes mastery. You'll learn how to smooth container management with Kubernetes, including securing your clusters, and upgrades and rollbacks with zero downtime. No development stack, platform, or background is assumed. Author Elton Stoneman describes all patterns generically, so you can easily apply them to your applications and port them to other projects! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Create apps that perform identically on your laptop, data center, and cloud! Kubernetes provides a consistent method for deploying applications on any platform, making it easy to grow. By efficiently orchestrating Docker containers, Kubernetes simplifies tasks like rolling upgrades, scaling, and self-healing. About the book Learn Kubernetes in a Month of Lunches is your guide to getting up and running with Kubernetes. You'll progress from Kubernetes basics to essential skills, learning to model, deploy, and manage applications in production. Exercises demonstrate how Kubernetes works with multiple languages and frameworks. You'll also practice with new apps, legacy code, and serverless functions. What's inside Deploying applications on Kubernetes clusters Understanding the Kubernetes app lifecycle, from packaging to rollbacks Self-healing and scalable apps Using Kubernetes as a platform for new technologies About the reader For readers familiar with Docker and containerization. About the author Elton Stoneman is a Docker Captain, a 11-time Microsoft MVP, and the author of Learn Docker in a Month of Lunches. Table of Contents PART 1 - FAST TRACK TO

KUBERNETES 1 Before you begin 2 Running containers in Kubernetes with Pods and Deployments 3 Connecting Pods over the network with Services 4 Configuring applications with ConfigMaps and Secrets 5 Storing data with volumes, mounts, and claims 6 Scaling applications across multiple Pods with controllers PART 2 - KUBERNETES IN THE REAL WORLD 7 Extending applications with multicontainer Pods 8 Running data-heavy apps with StatefulSets and Jobs 9 Managing app releases with rollouts and rollbacks 10 Packaging and managing apps with Helm 11 App development—Developer workflows and CI/CD PART 3 - PREPARING FOR PRODUCTION 12 Empowering self-healing apps 13 Centralizing logs with Fluentd and Elasticsearch 14 Monitoring applications with Kubernetes with Prometheus 15 Managing incoming traffic with Ingress 16 Securing applications with policies, contexts, and admission control PART 4 - PURE AND APPLIED KUBERNETES 17 Securing resources with role-based access control 18 Deploying Kubernetes: Multinode and multiarchitecture clusters 19 Controlling workload placement and automatic scaling 20 Extending Kubernetes with custom resources and Operators 21 Running serverless functions in Kubernetes 22 Never the end

Networking and Kubernetes - James Strong
2021-09-08

Kubernetes has become an essential part of the daily work for most system, network, and cluster administrators today. But to work effectively together on a production-scale Kubernetes system, they must be able to speak the same language. This book provides a clear guide to the layers of complexity and abstraction that come with running a Kubernetes network. Authors James Strong and Vallery Lancey bring you up to speed on the intricacies that Kubernetes has to offer for large container deployments. If you're to be effective in troubleshooting and maintaining a production cluster, you need to be well versed in the abstraction provided at each layer. This practical book shows you how. Learn the Kubernetes networking model Choose the best interface for your clusters from the CNCF Container Network Interface project Explore the networking and Linux primitives that power Kubernetes Quickly

troubleshoot networking issues and prevent downtime Examine cloud networking and Kubernetes using the three major providers: Amazon Web Services, Google Cloud, and Microsoft Azure Learn the pros and cons of various network tools--and how to select the best ones for your stack

DevOps with Kubernetes - Hideto Saito
2017-10-16

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.

Learn Kubernetes Security - Kaizhe Huang
2020-07-09

Secure your container environment against cyberattacks and deliver robust deployments with this practical guide Key FeaturesExplore a variety of Kubernetes components that help you to prevent cyberattacksPerform effective resource management and monitoring with Prometheus and built-in Kubernetes toolsLearn techniques to prevent attackers from compromising applications and accessing resources for crypto-coin miningBook Description Kubernetes is an open source orchestration platform for managing containerized applications. Despite widespread adoption of the technology, DevOps engineers might be unaware of the pitfalls of containerized environments. With this comprehensive book, you'll learn how to use the different security integrations available on the Kubernetes platform to safeguard your deployments in a variety of scenarios. Learn Kubernetes Security starts by taking you through the Kubernetes architecture and the networking model. You'll then learn about the Kubernetes threat model and get to grips with securing clusters. Throughout the book, you'll cover various security aspects such as authentication, authorization, image scanning, and resource

monitoring. As you advance, you'll learn about securing cluster components (the kube-apiserver, CoreDNS, and kubelet) and pods (hardening image, security context, and PodSecurityPolicy). With the help of hands-on examples, you'll also learn how to use open source tools such as Anchore, Prometheus, OPA, and Falco to protect your deployments. By the end of this Kubernetes book, you'll have gained a solid understanding of container security and be able to protect your clusters from cyberattacks and mitigate cybersecurity threats. What you will learnUnderstand the basics of Kubernetes architecture and networkingGain insights into different security integrations provided by the Kubernetes platformDelve into Kubernetes' threat modeling and security domainsExplore different security configurations from a variety of practical examplesGet to grips with using and deploying open source tools to protect your deploymentsDiscover techniques to mitigate or prevent known Kubernetes hacksWho this book is for This book is for security consultants, cloud administrators, system administrators, and DevOps engineers interested in securing their container deployments. If you're looking to secure your Kubernetes clusters and cloud-based deployments, you'll find this book useful. A basic understanding of cloud computing and containerization is necessary to make the most of this book.

[Certified Kubernetes Administrator \(CKA\) Study Guide](#) - Benjamin Muschko 2022-06-09

The ability to administer and monitor a Kubernetes cluster is in high demand today. To meet this need, the Cloud Native Computing Foundation developed a certification exam to establish an administrator's credibility and value in the job market to confidently work in a Kubernetes environment. The Certified Kubernetes Administrator (CKA) certification exam is different from the typical multiple-choice format of other professional certifications. Instead, the CKA is a performance-based exam that requires deep knowledge of the tasks under immense time pressure. This study guide walks you through all the topics covered to fully prepare you for the exam. Author Benjamin Muschko also shares his personal experience with preparing for all aspects of the exam. Learn when and how to

apply Kubernetes concepts to administer and troubleshoot a production-grade cluster
Understand the objectives, abilities, and tips and tricks needed to pass the CKA exam
Explore the ins and outs of the kubectl command-line tool
Demonstrate competency to perform the responsibilities of a Kubernetes administrator
Solve real-world Kubernetes problems in a hands-on command-line environment
Effectively navigate and solve questions during the CKA exam

Cloud Native with Kubernetes - Alexander Raul 2021-01-04

Harness Kubernetes' extensibility to deploy modern patterns and learn to effectively handle production issues
Key Features
Build and run efficient cloud-native applications on Kubernetes using industry best practices
Operate Kubernetes in a production environment, troubleshoot clusters, and address security concerns
Deploy cutting-edge Kubernetes patterns such as service mesh and serverless to your cluster
Book Description
Kubernetes is a modern cloud native container orchestration tool and one of the most popular open source projects worldwide. In addition to the technology being powerful and highly flexible, Kubernetes engineers are in high demand across the industry. This book is a comprehensive guide to deploying, securing, and operating modern cloud native applications on Kubernetes. From the fundamentals to Kubernetes best practices, the book covers essential aspects of configuring applications. You'll even explore real-world techniques for running clusters in production, tips for setting up observability for cluster resources, and valuable troubleshooting techniques. Finally, you'll learn how to extend and customize Kubernetes, as well as gaining tips for deploying service meshes, serverless tooling, and more on your cluster. By the end of this Kubernetes book, you'll be equipped with the tools you need to confidently run and extend modern applications on Kubernetes. What you will learn
Set up Kubernetes and configure its authentication
Deploy your applications to Kubernetes
Configure and provide storage to Kubernetes applications
Expose Kubernetes applications outside the cluster
Control where and how applications are run on Kubernetes
Set up observability for Kubernetes
Build a

continuous integration and continuous deployment (CI/CD) pipeline for Kubernetes
Extend Kubernetes with service meshes, serverless, and more
Who this book is for
This book is for developers, architects, DevOps engineers, or anyone interested in developing and managing cloud-native applications. Those already running cloud applications and looking for a better way to manage their platform or others interested in a career change given the recent popularity of Kubernetes will also find this book helpful. Some familiarity with cloud computing, containers and DevOps is required, but no prior knowledge of building production applications using Kubernetes is needed to get started with this book.

Certified Kubernetes Application Developer (CKAD) Study Guide - Benjamin Muschko 2021-02-02

Developers with the ability to operate, troubleshoot, and monitor applications in Kubernetes are in high demand today. To meet this need, the Cloud Native Computing Foundation created a certification exam to establish a developer's credibility and value in the job market to work in a Kubernetes environment. The Certified Kubernetes Application Developer (CKAD) exam is different from the typical multiple-choice format of other certifications. Instead, the CKAD is a performance-based exam that requires deep knowledge of the tasks under immense time pressure. This study guide walks you through all the topics you need to fully prepare for the exam. Author Benjamin Muschko also shares his personal experience with preparing for all aspects of the exam. Learn when and how to apply Kubernetes concepts to manage an application
Understand the objectives, abilities, tips, and tricks needed to pass the CKAD exam
Explore the ins and outs of the kubectl command-line tool
Demonstrate competency for performing the responsibilities of a Kubernetes application developer
Solve real-world Kubernetes problems in a hands-on command-line environment
Navigate and solve questions during the CKAD exam

Learning Helm - Matt Butcher 2021-01-20
Get up to speed with Helm, the preeminent package manager for the Kubernetes container

orchestration system. This practical guide shows you how to efficiently create, install, and manage the applications running inside your containers. Helm maintainers Matt Butcher, Matt Farina, and Josh Dolitsky explain how this package manager fits into the Kubernetes ecosystem and provide an inside look at Helm's design and best practices. More than 70% of the organizations that work with Kubernetes use Helm today. While the Helm community provides thousands of packages, or charts, to help you get started, this book walks developers and DevOps engineers through the process of creating custom charts to package applications. If you have a working understanding of Kubernetes, you're ready to go. Explore primary features including frequently used Helm commands

- Learn how to build and deploy Helm charts from scratch
- Use Helm to manage complexity and achieve repeatable deployments
- Package an application and its dependencies for easy installation
- Manage the entire lifecycle of applications on Kubernetes
- Explore ways to extend Helm to add features and functionality
- Learn features for testing, handling dependencies, and providing security

Edge Computing Systems with Kubernetes - Sergio Mendez 2022-10-14

Understand how to use K3s and k3OS for different use cases and discover best practices for building an edge computing system

- Key Features
- A guide to implementing an edge computing environment
- Reduce latency and costs for real-time applications running at the edge
- Find stable and relevant cloud native open source software to complement your edge environments

Book Description Edge computing is a way of processing information near the source of data instead of processing it on data centers in the cloud. In this way, edge computing can reduce latency when data is processed, improving the user experience on real-time data visualization for your applications. Using K3s, a light-weight Kubernetes and k3OS, a K3s-based Linux distribution along with other open source cloud native technologies, you can build reliable edge computing systems without spending a lot of money. In this book, you will learn how to design edge computing systems with containers and edge devices using sensors, GPS modules, WiFi, LoRa communication and so

on. You will also get to grips with different use cases and examples covered in this book, how to solve common use cases for edge computing such as updating your applications using GitOps, reading data from sensors and storing it on SQL and NoSQL databases. Later chapters will show you how to connect hardware to your edge clusters, predict using machine learning, and analyze images with computer vision. All the examples and use cases in this book are designed to run on devices using 64-bit ARM processors, using Raspberry Pi devices as an example. By the end of this book, you will be able to build your own edge computing systems using the content of the chapters as Lego pieces to fit your needs. What you will learn

- Configure k3OS and K3s for development and production scenarios
- Package applications into K3s for shipped-node scenarios
- Deploy in occasionally connected scenarios, from one node to one million nodes
- Manage GitOps for applications across different locations
- Use open source cloud native software to complement your edge computing systems
- Implement observability event-driven and serverless edge applications
- Collect and process data from sensors at the edge and visualize it into the cloud

Who this book is for This book is for engineers (developers and/or operators) seeking to bring the cloud native benefits of GitOps and Kubernetes to the edge. Anyone with basic knowledge of Linux and containers looking to learn Kubernetes using examples applied to edge computing and hardware systems will benefit from this book.

Kubernetes Cookbook - Sébastien Goasguen 2018-02-14

If your organization is preparing to move toward a cloud-native computing architecture, this cookbook shows you how to successfully use Kubernetes, the de-facto standard for automating the deployment, scaling, and management of containerized applications. With more than 80 proven recipes, developers, system administrators, and architects will quickly learn how to get started with Kubernetes and understand its powerful API. Through the course of the book, authors Sébastien Goasguen and Michael Hausenblas provide several detailed solutions for installing, interacting with, and using Kubernetes in development and

production. You'll learn how to adapt the system to your particular needs and become familiar with the wider Kubernetes ecosystem. Each standalone chapter features recipes written in O'Reilly's popular problem-solution-discussion format. Recipes in this cookbook focus on:

- Creating a Kubernetes cluster
- Using the Kubernetes command-line interface
- Managing fundamental workload types
- Working with services
- Exploring the Kubernetes API
- Managing stateful and non-cloud native apps
- Working with volumes and configuration data
- Cluster-level and application-level scaling
- Securing your applications
- Monitoring and logging
- Maintenance and troubleshooting.

The Kubernetes Bible - Nassim Kebhani
2022-02-24

Get up and running with Kubernetes 1.19 and simplify the way you build, deploy, and maintain scalable distributed systems

Key Features

- Design and deploy large clusters on various cloud platforms
- Explore containerized application deployment, debugging, and recovery with the latest Kubernetes version 1.19
- Become well-versed with advanced Kubernetes topics such as traffic routing or Pod autoscaling and scheduling

Book Description

With its broad adoption across various industries, Kubernetes is helping engineers with the orchestration and automation of container deployments on a large scale, making it the leading container orchestration system and the most popular choice for running containerized applications. This Kubernetes book starts with an introduction to Kubernetes and containerization, covering the setup of your local development environment and the roles of the most important Kubernetes components. Along with covering the core concepts necessary to make the most of your infrastructure, this book will also help you get acquainted with the fundamentals of Kubernetes. As you advance, you'll learn how to manage Kubernetes clusters on cloud platforms, such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP), and develop and deploy real-world applications in Kubernetes using practical examples. Additionally, you'll get to grips with managing microservices along with best practices. By the end of this book, you'll be equipped with battle-tested knowledge of advanced Kubernetes

topics, such as scheduling of Pods and managing incoming traffic to the cluster, and be ready to work with Kubernetes on cloud platforms. What you will learn

- Manage containerized applications with Kubernetes
- Understand Kubernetes architecture and the responsibilities of each component
- Set up Kubernetes on Amazon Elastic Kubernetes Service, Google Kubernetes Engine, and Microsoft Azure Kubernetes Service
- Deploy cloud applications such as Prometheus and Elasticsearch using Helm charts
- Discover advanced techniques for Pod scheduling and auto-scaling the cluster
- Understand possible approaches to traffic routing in Kubernetes

Who this book is for

This book is for software developers and DevOps engineers looking to understand how to work with Kubernetes for orchestrating containerized applications and services in the cloud. Prior experience with designing software running in operating system containers, as well as a general background in DevOps best practices, will be helpful. Basic knowledge of Kubernetes, Docker, and leading cloud service providers assist with grasping the concepts covered easily.

Kubernetes on AWS - Ed Robinson 2018-11-30

Learn to implement container orchestration on AWS with ease

Key Features

- Leverage the power of Kubernetes on AWS to deploy highly scalable applications
- Provision Kubernetes clusters on Amazon EC2 environments
- Implement best practices to improve efficiency and security of Kubernetes on the cloud

Book Description

Docker containers promise to radicalize the way developers and operations build, deploy, and manage applications running on the cloud. Kubernetes provides the orchestration tools you need to realize that promise in production. Kubernetes on AWS guides you in deploying a production-ready Kubernetes cluster on the AWS platform. You will then discover how to utilize the power of Kubernetes, which is one of the fastest growing platforms for production-based container orchestration, to manage and update your applications. Kubernetes is becoming the go-to choice for production-grade deployments of cloud-native applications. This book covers Kubernetes from first principles. You will start by learning about Kubernetes' powerful abstractions - Pods and Services - that make managing container deployments easy. This will

be followed by a guided tour through setting up a production-ready Kubernetes cluster on AWS, while learning the techniques you need to successfully deploy and manage your own applications. By the end of the book, you will have gained plenty of hands-on experience with Kubernetes on Amazon Web Services. You will also have picked up some tips on deploying and managing applications, keeping your cluster and applications secure, and ensuring that your whole system is reliable and resilient to failure. What you will learn

Learn how to provision a production-ready Kubernetes cluster on AWS
Deploy your own applications to Kubernetes with Helm
Discover strategies for troubleshooting your cluster and know where to find help with issues
Explore the best ways to monitor your cluster and the applications running on it
Supercharge your cluster by integrating it with the tools provided by the AWS platform
Architect your cluster for high availability
Who this book is for If you're a cloud engineer, cloud solution provider, sysadmin, site reliability engineer, or developer with an interest in DevOps and are looking for an extensive guide to running Kubernetes in the AWS environment, this book is for you. Though any previous knowledge of Kubernetes is not expected, some experience with Linux and Docker containers would be a bonus.

Kubernetes Patterns - Bilgin Ibryam 2019-04-09
The way developers design, build, and run software has changed significantly with the evolution of microservices and containers. These modern architectures use new primitives that require a different set of practices than most developers, tech leads, and architects are accustomed to. With this focused guide, Bilgin Ibryam and Roland Huß from Red Hat provide common reusable elements, patterns, principles, and practices for designing and implementing cloud-native applications on Kubernetes. Each pattern includes a description of the problem and a proposed solution with Kubernetes specifics. Many patterns are also backed by concrete code examples. This book is ideal for developers already familiar with basic Kubernetes concepts who want to learn common cloud native patterns. You'll learn about the following pattern categories: Foundational patterns cover the core principles and practices

for building container-based cloud-native applications. Behavioral patterns explore finer-grained concepts for managing various types of container and platform interactions. Structural patterns help you organize containers within a pod, the atom of the Kubernetes platform. Configuration patterns provide insight into how application configurations can be handled in Kubernetes. Advanced patterns covers more advanced topics such as extending the platform with operators.

Kubernetes Operators - Jason Dobies 2020-02-21
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

Mastering Kubernetes - Gigi Sayfan 2018-04-27

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: Up and Running - Kelsey Hightower 2017-09-07

Legend has it that Google deploys over two billion application containers a week. How's that possible? Google revealed the secret through a project called Kubernetes, an open source cluster orchestrator (based on its internal Borg system) that radically simplifies the task of building, deploying, and maintaining scalable distributed systems in the cloud. This practical guide shows you how Kubernetes and container technology can help you achieve new levels of velocity, agility, reliability, and efficiency.

Authors Kelsey Hightower, Brendan Burns, and Joe Beda—who've worked on Kubernetes at Google and other organizations—explain how this system fits into the lifecycle of a distributed application. You will learn how to use tools and APIs to automate scalable distributed systems, whether it is for online services, machine-learning applications, or a cluster of Raspberry Pi computers. Explore the distributed system challenges that Kubernetes addresses Dive into containerized application development, using containers such as Docker Create and run containers on Kubernetes, using the docker image format and container runtime Explore specialized objects essential for running applications in production Reliably roll out new software versions without downtime or errors Get examples of how to develop and deploy real-world applications in Kubernetes

Learn Docker in a Month of Lunches - Elton Stoneman 2020-08-04

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.

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[Learn Kubernetes in a Month of Lunches](#) - Elton Stoneman 2021-03-23

In *Learn Kubernetes in a Month of Lunches* you'll go from "what's a Pod?" to automatically scaling clusters of containers and components in just 22 hands-on lessons, each short enough to fit into a lunch break. Every lesson is task-focused and covers an essential skill on the road to Kubernetes mastery. You'll learn how to smooth container management with Kubernetes, including securing your clusters, and upgrades and rollbacks with zero downtime. No development stack, platform, or background is assumed. Author Elton Stoneman describes all patterns generically, so you can easily apply them to your applications and port them to other projects!

about the technology Create apps that perform identically on your laptop, data center, and cloud! Kubernetes provides a consistent method for deploying applications on any platform, making it easy to grow. By efficiently orchestrating Docker containers, Kubernetes simplifies tasks like rolling upgrades, scaling, and self-healing.

about the book *Learn Kubernetes in a Month of Lunches* is your guide to getting up and running with Kubernetes. You'll progress from Kubernetes basics to essential skills, learning to model, deploy, and manage applications in production. Exercises demonstrate how Kubernetes works with multiple languages and frameworks. You'll also practice with new apps, legacy code, and serverless functions.

what's inside Deploying applications on Kubernetes clusters

Understanding the Kubernetes app lifecycle, from packaging to rollbacks

Self-healing and scalable apps

Using Kubernetes as a platform for new technologies

about the reader For readers familiar with Docker and containerization.

about the author Elton Stoneman is a Docker Captain, a 11-time Microsoft MVP, and the author of *Learn Docker in a Month of Lunches*.

Kubernetes - An Enterprise Guide - Marc

Boorshtein 2021-12-22

Master core Kubernetes concepts important to enterprises from security, policy, and management point-of-view. Learn to deploy a service mesh using Istio, build a CI/CD platform, and provide enterprise security to your clusters. Key Features Extensively revised edition to cover the latest updates and new releases along with two new chapters to introduce Istio Get a firm command of Kubernetes from a dual perspective of an admin as well as a developer Understand advanced topics including load balancing, externalDNS, global load balancing, authentication integration, policy, security, auditing, backup, Istio and CI/CD Book Description Kubernetes has taken the world by storm, becoming the standard infrastructure for DevOps teams to develop, test, and run applications. With significant updates in each chapter, this revised edition will help you acquire the knowledge and tools required to integrate Kubernetes clusters in an enterprise environment. The book introduces you to Docker and Kubernetes fundamentals, including a review of basic Kubernetes objects. You'll get to grips with containerization and understand its core functionalities such as creating ephemeral multinode clusters using KinD. The book has replaced PodSecurityPolicies (PSP) with OPA/Gatekeeper for PSP-like enforcement. You'll integrate your container into a cloud platform and tools including MetalLB, externalDNS, OpenID connect (OIDC), Open Policy Agent (OPA), Falco, and Velero. After learning to deploy your core cluster, you'll learn how to deploy Istio and how to deploy both monolithic applications and microservices into your service mesh. Finally, you will discover how to deploy an entire GitOps platform to Kubernetes using continuous integration and continuous delivery (CI/CD). What you will learn Create a multinode Kubernetes cluster using KinD Implement Ingress, MetalLB, ExternalDNS, and the new sandbox project, K8GB Configure a cluster OI DC and impersonation Deploy a monolithic application in Istio service mesh Map enterprise authorization to Kubernetes Secure clusters using OPA and GateKeeper Enhance auditing using Falco and ECK Back up your workload for disaster recovery and cluster migration Deploy to a GitOps platform using Tekton, GitLab, and

ArgoCD Who this book is for This book is for anyone interested in DevOps, containerization, and going beyond basic Kubernetes cluster deployments. DevOps engineers, developers, and system administrators looking to enhance their IT career paths will also find this book helpful. Although some prior experience with Docker and Kubernetes is recommended, this book includes a Kubernetes bootcamp that provides a description of Kubernetes objects to help you if you are new to the topic or need a refresher.

The The Kubernetes Workshop - Zachary Arnold 2020-09-24

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.

Getting Started with Kubernetes - Jonathan Baier 2017-05-31

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.

Mastering Kubernetes - Gigi Sayfan 2017-05-25 Master the art of container management utilizing the power of Kubernetes. About This Book This practical guide demystifies Kubernetes and ensures that your clusters are always available, scalable, and up to date Discover new features such as autoscaling, rolling updates, resource quotas, and cluster size Master the skills of designing and deploying large clusters on various cloud platforms Who This Book Is For The book is for system administrators and developers who have intermediate level of knowledge with Kubernetes and are now waiting to master its advanced features. You should also have basic networking knowledge. This advanced-level book provides a pathway to master 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 See the identity model of Kubernetes and 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 Discover the art of running complex stateful applications in your container environment Deliver applications as standard packages In Detail Kubernetes is an open source system to automate the deployment, scaling, and management of containerized applications. If you are running more than just a few containers or want automated management of your containers, you need Kubernetes. This book mainly focuses on the advanced management of Kubernetes clusters. It covers problems that arise when you start using container orchestration in production. We start by giving you an overview of the guiding principles in Kubernetes design and show you the best practises in the fields of security, high availability, and cluster federation. You will discover how to run complex stateful microservices on Kubernetes including advanced features as horizontal pod autoscaling, rolling updates, resource quotas, and persistent storage back ends. Using real-world use cases, we explain the options for network configuration and provides guidelines on how to set up, operate, and troubleshoot various Kubernetes networking plugins. Finally, we cover custom resource development and utilization in automation and maintenance workflows. By the end of this book, you'll know everything you need to know to go from intermediate to advanced level. Style and approach Delving into the design of the Kubernetes platform, the reader will be exposed to the advanced features and best practices of Kubernetes. This book will be an advanced level book which will provide a pathway to master Kubernetes

Kubernetes and Docker - An Enterprise Guide - Scott Surovich 2020-11-06 Apply Kubernetes beyond the basics of Kubernetes clusters by implementing IAM using OIDC and Active Directory, Layer 4 load balancing using MetalLB, advanced service integration, security, auditing, and CI/CD Key Features Find out how to add enterprise features to a Kubernetes cluster with theory and exercises to guide you Understand advanced topics including load balancing, externalDNS, IDP integration, security, auditing, backup, and CI/CD Create development clusters for unique testing requirements, including running multiple

clusters on a single server to simulate an enterprise environment

Book Description

Containerization has changed the DevOps game completely, with Docker and Kubernetes playing important roles in altering the flow of app creation and deployment. This book will help you acquire the knowledge and tools required to integrate Kubernetes clusters in an enterprise environment. The book begins by introducing you to Docker and Kubernetes fundamentals, including a review of basic Kubernetes objects. You'll then get to grips with containerization and understand its core functionalities, including how to create ephemeral multinode clusters using kind. As you make progress, you'll learn about cluster architecture, Kubernetes cluster deployment, and cluster management, and get started with application deployment. Moving on, you'll find out how to integrate your container to a cloud platform and integrate tools including MetalLB, externalDNS, OpenID connect (OIDC), pod security policies (PSPs), Open Policy Agent (OPA), Falco, and Velero. Finally, you will discover how to deploy an entire platform to the cloud using continuous integration and continuous delivery (CI/CD). By the end of this Kubernetes book, you will have learned how to create development clusters for testing applications and Kubernetes components, and be able to secure and audit a cluster by implementing various open-source solutions including OpenUnison, OPA, Falco, Kibana, and Velero. What you will learn

Create a multinode Kubernetes cluster using kind
Implement Ingress, MetalLB, and ExternalDNS
Configure a cluster
OIDC using impersonation
Map enterprise authorization to Kubernetes
Secure clusters using PSPs and OPA
Enhance auditing using Falco and EFK
Back up your workload for disaster recovery and cluster migration
Deploy to a platform using Tekton, GitLab, and ArgoCD

Who this book is for This book is for anyone interested in DevOps, containerization, and going beyond basic Kubernetes cluster deployments. DevOps engineers, developers, and system administrators looking to enhance their IT career paths will also find this book helpful. Although some prior experience with Docker and Kubernetes is recommended, this book includes a Kubernetes bootcamp that provides a description of Kubernetes objects to help you if

you are new to the topic or need a refresher.

Kubernetes Best Practices - Brendan Burns
2019-11-14

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

Managing Kubernetes - Brendan Burns
2018-11-12

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

Kubeflow Operations Guide - Josh Patterson
2020-12-04

Building models is a small part of the story when it comes to deploying machine learning applications. The entire process involves developing, orchestrating, deploying, and running scalable and portable machine learning workloads--a process Kubeflow makes much easier. This practical book shows data scientists, data engineers, and platform architects how to plan and execute a Kubeflow project to make their Kubernetes workflows portable and scalable. Authors Josh Patterson, Michael Katzenellenbogen, and Austin Harris demonstrate how this open source platform orchestrates workflows by managing machine learning pipelines. You'll learn how to plan and execute a Kubeflow platform that can support workflows from on-premises to cloud providers including Google, Amazon, and Microsoft. Dive into Kubeflow architecture and learn best practices for using the platform Understand the process of planning your Kubeflow deployment Install Kubeflow on an existing on-premises Kubernetes cluster Deploy Kubeflow on Google Cloud Platform step-by-step from the command line Use the managed Amazon Elastic Kubernetes Service (EKS) to deploy Kubeflow on AWS Deploy and manage Kubeflow across a network of Azure cloud data centers around the world Use KFServing to develop and deploy machine learning models

Certified Kubernetes Administrator (CKA) Exam Guide - Melony Qin 2022-11-04

Develop a deep understanding of Kubernetes and the cloud native ecosystem, and pass the CKA exam with confidence with this end-to-end study guide Key Features Get to grips with the core concepts of Kubernetes API primitives Deploy, configure, manage, and troubleshoot Kubernetes clusters Cement your credibility in the job market by becoming a Certified

Kubernetes Administrator Book Description
Kubernetes is the most popular container orchestration tool in the industry. The Kubernetes Administrator certification will help you establish your credibility and enable you to efficiently support the business growth of individual organizations with the help of this open source platform. The book begins by introducing you to Kubernetes architecture and the core concepts of Kubernetes. You'll then get to grips with the main Kubernetes API primitives, before diving into cluster installation, configuration, and management. Moving ahead, you'll explore different approaches while maintaining the Kubernetes cluster, perform upgrades for the Kubernetes cluster, as well as backup and restore etc. As you advance, you'll deploy and manage workloads on Kubernetes and work with storage for Kubernetes stateful workloads with the help of practical scenarios. You'll also delve into managing the security of Kubernetes applications and understand how different components in Kubernetes communicate with each other and with other applications. The concluding chapters will show you how to troubleshoot cluster- and application-level logging and monitoring, cluster components, and applications in Kubernetes. By the end of this Kubernetes book, you'll be fully prepared to pass the CKA exam and gain practical knowledge that can be applied in your day-to-day work. What you will learn Understand the fundamentals of Kubernetes and its tools Get hands-on experience in installing and configuring Kubernetes clusters Manage Kubernetes clusters and deployed workloads with ease Get up and running with Kubernetes networking and storage Manage the security of applications deployed on Kubernetes Find out how to monitor, log, and troubleshoot Kubernetes clusters and apps among others Who this book is for This book is for application developers, DevOps engineers, data engineers, and cloud architects who want to pass the CKA exam and certify their Kubernetes Administrator skills in the market. Basic knowledge of Kubernetes is recommended to get the most out of this book.