

Kubernetes Up And Running Mesosphere

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Native Docker Clustering with Swarm - Fabrizio Soppelsa 2016-12-20

Deploy, configure, and run clusters of Docker containers with Swarm About This Book Get to grips with Docker Swarm, one of the key components of the Docker ecosystem. Optimize Swarm and SwarmKit features for scaling massive applications through containers. Learn about Docker's scheduling tricks, high availability, security, and platform scalability. Who This Book Is For If you are a Linux admin or a Docker user who wants to natively manage Docker clusters, then this is the book for you. What You Will Learn Create and manage Swarm Mode clusters of any size Get a backstage view of the biggest Swarms ever built : Swarm2k and Swarm3k, with their 2,300 and 4,700 nodes Discovery mechanisms and Raft Deploy your containerized app on Swarm Administer Swarm clusters on AWS, Azure, and DigitalOcean Integrate Flocker volumes with Swarm Create and manage Swarms on OpenStack Magnum In Detail Docker Swarm serves as one of the crucial components of the Docker ecosystem and offers a native solution for you to orchestrate containers. It's turning out to be one of the preferred choices for Docker clustering thanks to its recent improvements. This book covers Swarm, Swarm Mode, and SwarmKit. It gives you a guided tour on how Swarm works and how to work with Swarm. It describes how to set up local test installations and then moves to huge distributed infrastructures. You will be shown how Swarm works internally, what's new in Swarmkit, how to automate big Swarm deployments, and how to configure and operate

a Swarm cluster on the public and private cloud. This book will teach you how to meet the challenge of deploying massive production-ready applications and a huge number of containers on Swarm. You'll also cover advanced topics that include volumes, scheduling, a Libnetwork deep dive, security, and platform scalability. Style and approach A comprehensive guide that covers all aspects of Docker Swarm from setup to customization.

Building Microservices with ASP.NET Core - Kevin Hoffman 2017-08-31

At a time when nearly every vertical, regardless of domain, seems to need software running in the cloud to make money, microservices provide the agility and drastically reduced time to market you require. This hands-on guide shows you how to create, test, compile, and deploy microservices, using the ASP.NET Core free and open-source framework. Along the way, you'll pick up good, practical habits for building powerful and robust services. Building microservices isn't about learning a specific framework or programming language; it's about building applications that thrive in elastically scaling environments that don't have host affinity, and that can start and stop at a moment's notice. This practical book guides you through the process. Learn test-driven and API-first development concepts Communicate with other services by creating and consuming backing services such as databases and queues Build a microservice that depends on an external data source Learn about event sourcing, the event-centric approach to persistence Use ASP.NET Core to build web applications

designed to thrive in the cloud Build a service that consumes, or is consumed by, other services Create services and applications that accept external configuration Explore ways to secure ASP.NET Core microservices and applications

Microservices with Azure - Namit Tanasseri
2017-06-28

Architect enterprise-grade, Microservice-based solutions using Microsoft Azure Service Fabric. About This Book Explore architectural patterns for building modern day Microservice-based systems Learn about Microsoft Service Fabric as a platform to host distributed Microservices Discover multiple options for hosting Microservices on heterogeneous, cross-platform environments Learn to configure Azure Service Fabric clusters for enterprise-grade service deployments Who This Book Is For The book is aimed at IT architects, system administrators, and DevOps engineers who have a basic knowledge of the Microsoft Azure platform and are working on, or are curious about, the concepts of Microservices and Microservice architecture. What You Will Learn Understand the basics of Microservices and how Microsoft Azure fits into the equation Master Azure Service Fabric architecture and services Explore Azure Service Fabric application programming models Comprehensive study of various architecture patterns for building enterprise-grade Microservices Manage and deploy Microservices on Azure Service Fabric An insight into the future of Microservices with containers and serverless computing In Detail Microsoft Azure is rapidly evolving and is widely used as a platform on which you can build Microservices that can be deployed on-premise and on-cloud heterogeneous environments through Microsoft Azure Service Fabric. This book will help you understand the concepts of Microservice application architecture and build highly maintainable and scalable enterprise-grade applications using the various services in Microsoft Azure Service Fabric. We will begin by understanding the intricacies of the Microservices architecture and its advantages over the monolithic architecture and Service Oriented Architecture (SOA) principles. We will present various scenarios where Microservices should be used and walk you through the architectures of Microservice-based

applications. Next, you will take an in-depth look at Microsoft Azure Service Fabric, which is the best-in-class platform for building Microservices. You will explore how to develop and deploy sample applications on Microsoft Azure Service Fabric to gain a thorough understanding of it. Building Microservice-based application is complicated. Therefore, we will take you through several design patterns that solve the various challenges associated with realizing the Microservices architecture in enterprise applications. Each pattern will be clearly illustrated with examples that you can keep referring to when designing applications. Finally, you will be introduced to advanced topics such as Serverless computing and DevOps using Service Fabric, to help you undertake your next venture with confidence. Style and approach This book introduces its readers to the concept of Microservices and Microsoft Azure Service Fabric as a distributed platform to host enterprise-grade Microservices. It then addresses common architectural challenges associated with the Microservice architecture, using proven architectural patterns.

Mastering Docker - Russ McKendrick
2020-10-12

Unlock the full potential of the Docker containerization platform with this practical guide Key Features Explore tools such as Docker Engine, Machine, Compose, and Swarm Discover how you can integrate Docker into your everyday workflows Get well-versed with Kubernetes options such as Minikube, Kind, and MicroK8s Book Description Docker has been a game changer when it comes to how modern applications are deployed and created. It has now grown into a key driver of innovation beyond system administration, with a significant impact on the world of web development. Mastering Docker shows you how you can ensure that you're keeping up with the innovations it's driving and be sure you're using it to its full potential. This fourth edition not only demonstrates how to use Docker more effectively but also helps you rethink and reimagine what you can achieve with it. You'll start by building, managing, and storing images along with exploring best practices for working with Docker confidently. Once you've got to grips with Docker security, the book covers

essential concepts for extending and integrating Docker in new and innovative ways. You'll also learn how to take control of your containers efficiently using Docker Compose, Docker Swarm, and Kubernetes. By the end of this Docker book, you'll have a broad yet detailed sense of what's possible with Docker and how seamlessly it fits in with a range of other platforms and tools. What you will learn

Get to grips with essential Docker components and concepts
Discover the best ways to build, store, and distribute container images
Understand how Docker can fit into your development workflow
Secure your containers and files with Docker's security features
Explore first-party and third-party cluster tools and plugins
Launch and manage your Kubernetes clusters in major public clouds

Who this book is for
If you are a software architect, DevOps engineer, sysadmin, or IT professional looking to leverage Docker's extensive features for innovating any process from system administration to web development, *Mastering Docker* will show you how you can use it to its full potential. A basic understanding of containerization and prior Docker experience is necessary.

Docker: Up & Running - Karl Matthias
2015-06-11

Updated to cover Docker version 1.10 Docker is quickly changing the way that organizations are deploying software at scale. But understanding how Linux containers fit into your workflow—and getting the integration details right—are not trivial tasks. With this practical guide, you'll learn how to use Docker to package your applications with all of their dependencies, and then test, ship, scale, and support your containers in production. Two Lead Site Reliability Engineers at New Relic share much of what they have learned from using Docker in production since shortly after its initial release. Their goal is to help you reap the benefits of this technology while avoiding the many setbacks they experienced. Learn how Docker simplifies dependency management and deployment workflow for your applications

Start working with Docker images, containers, and command line tools
Use practical techniques to deploy and test Docker-based Linux containers in production
Debug containers by understanding their composition and internal processes
Deploy

production containers at scale inside your data center or cloud environment Explore advanced Docker topics, including deployment tools, networking, orchestration, security, and configuration

[Microservices with Docker on Microsoft Azure \(includes Content Update Program\)](#) - Boris Scholl 2016-06-24

Book + Content Update Program “Beyond just describing the basics, this book dives into best practices every aspiring microservices developer or architect should know.” —Foreword by Corey Sanders, Partner Director of Program Management, Azure Microservice-based applications enable unprecedented agility and ease of management, and Docker containers are ideal for building them. Microsoft Azure offers all the foundational technology and higher-level services you need to develop and run any microservices application. *Microservices with Docker on Microsoft Azure* brings together essential knowledge for creating these applications from the ground up, or incrementally deconstructing monolithic applications over time. The authors draw on their pioneering experience helping to develop Azure’s microservices features and collaborating with Microsoft product teams who’ve relied on microservices architectures for years. They illuminate the benefits and challenges of microservices development and share best practices all developers and architects should know. You’ll gain hands-on expertise through a detailed sample application, downloadable at github.com/flakio/flakio.github.io. Step by step, you’ll walk through working with services written in Node.js, Go, and ASP.NET 5, using diverse data stores (mysql, elasticsearch, block storage). The authors guide you through using Docker Hub as a service registry, and Microsoft Azure Container service for cluster management and service orchestration. Coverage includes:

Recognizing how microservices architectures are different, and when they make sense
Understanding Docker containers in the context of microservices architectures
Building, pulling, and layering Docker images
Working with Docker volumes, containers, images, tags, and logs
Using Docker Swarm, Docker Compose, and Docker Networks
Creating Docker hosts using the Azure portal, Azure Resource Manager, the

command line, docker-machine, or locally via Docker toolbox Establishing development and DevOps environments to support microservices applications Making the most of Docker's continuous delivery options Using Azure's cluster and container orchestration capabilities to operate and scale containerized microservices applications with maximum resilience Monitoring microservices applications with Azure Diagnostics, Visual Studio Application Insights, and Microsoft Operations Management Suite Developing microservices applications faster and more effectively with Azure Service Fabric An extensive sample application demonstrating the microservices concepts discussed throughout the book is available online In addition, this book is part of InformIT's exciting new Content Update Program, which provides content updates for major technology improvements! As significant updates are made to Docker and Azure, sections of this book will be updated or new sections will be added to match the updates to the technologies. As updates become available, they will be delivered to you via a free Web Edition of this book, which can be accessed with any Internet connection. To learn more, visit informit.com/cup. How to access the Web Edition: Follow the instructions inside to learn how to register your book to access the FREE Web Edition.

Docker: Up & Running - Sean P. Kane
2018-09-07

Docker is rapidly changing the way organizations deploy software at scale. However, understanding how Linux containers fit into your workflow—and getting the integration details right—is not a trivial task. With the updated edition of this practical guide, you'll learn how to use Docker to package your applications with all of their dependencies and then test, ship, scale, and support your containers in production. This edition includes significant updates to the examples and explanations that reflect the substantial changes that have occurred over the past couple of years. Sean Kane and Karl Matthias have added a complete chapter on Docker Compose, deeper coverage of Docker Swarm mode, introductions to both Kubernetes and AWS Fargate, examples on how to optimize your Docker images, and much more. Learn how Docker simplifies dependency management and

deployment workflow for your applications Start working with Docker images, containers, and command line tools Use practical techniques to deploy and test Docker containers in production Debug containers by understanding their composition and internal processes Deploy production containers at scale inside your data center or cloud environment Explore advanced Docker topics, including deployment tools, networking, orchestration, security, and configuration

Windows Subsystem for Linux 2 (WSL 2) Tips, Tricks, and Techniques - Stuart Leeks
2020-10-23

A practical handbook that will help you bridge the gap between Windows and Linux to develop apps that leverage the best features across both ecosystems with seamless interoperability Key Features Configure and control WSL to suit your needs and preferences Discover tips for working seamlessly between Windows and WSL Linux distros Learn how to work effectively with containers in WSL, as well as how to containerize your development environments with Visual Studio Code to isolate your dependencies Book Description Windows Subsystem for Linux (WSL) allows you to run native Linux tools alongside traditional Windows applications. Whether you're developing applications across multiple operating systems or looking to add more tools to your Windows environment, WSL offers endless possibilities. You'll start by understanding what WSL is and learn how to install and configure WSL along with different Linux distros. Next, you'll learn techniques that allow you to work across both Windows and Linux environments. You'll discover how to install and customize the new Windows Terminal. We'll also show you how to work with code in WSL using Visual Studio Code (VS Code). In addition to this, you'll explore how to work with containers with Docker and Kubernetes, and how to containerize a development environment using VS Code. While Microsoft has announced support for GPU and GUI applications in an upcoming release of WSL, at the time of writing these features are either not available or only in early preview releases. This book focuses on the stable, released features of WSL and giving you a solid understanding of the amazing techniques that

you can use with WSL today. By the end of this book, you'll be able to configure WSL and Windows Terminal to suit your preferences, and productively use Visual Studio Code for developing applications with WSL. What you will learn

Install and configure Windows Subsystem for Linux and Linux distros
Access web applications running in Linux from Windows
Invoke Windows applications, file systems, and environment variables from bash in WSL
Customize the appearance and behavior of the Windows Terminal to suit your preferences and workflows
Explore various tips for enhancing the Visual Studio Code experience with WSL
Install and work with Docker and Kubernetes within Windows Subsystem for Linux
Discover various productivity tips for working with Command-line tools in WSL
Who this book is for
This book is for developers who want to use Linux tools on Windows, including Windows-native programmers looking to ease into a Linux environment based on project requirements or Linux developers who've recently switched to Windows. This book is also for web developers working on open source projects with Linux-first tools such as Ruby or Python, or developers looking to switch between containers and development machines for testing apps. Prior programming or development experience and a basic understanding of running tasks in bash, PowerShell, or the Windows Command Prompt will be required.

Getting Started with Kubernetes - Jonathan Baier 2018-10-30

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.

Using Docker - Adrian Mouat 2015-12-09
Docker containers offer simpler, faster, and more robust methods for developing, distributing, and running software than previously available. With this hands-on guide, you'll learn why containers are so important, what you'll gain by adopting Docker, and how to make it part of your development process. Ideal for developers, operations engineers, and system administrators—especially those keen to embrace a DevOps approach—Using Docker will take you from Docker and container basics to running dozens of containers on a multi-host system with networking and scheduling. The core of the book walks you through the steps

needed to develop, test, and deploy a web application with Docker. Get started with Docker by building and deploying a simple web application Use Continuous Deployment techniques to push your application to production multiple times a day Learn various options and techniques for logging and monitoring multiple containers Examine networking and service discovery: how do containers find each other and how do you connect them? Orchestrate and cluster containers to address load-balancing, scaling, failover, and scheduling Secure your system by following the principles of defense-in-depth and least privilege

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.

Software Engineering at Google - Titus Winters 2020-02-28

Today, software engineers need to know not only

how to program effectively but also how to develop proper engineering practices to make their codebase sustainable and healthy. This book emphasizes this difference between programming and software engineering. How can software engineers manage a living codebase that evolves and responds to changing requirements and demands over the length of its life? Based on their experience at Google, software engineers Titus Winters and Hyrum Wright, along with technical writer Tom Manshreck, present a candid and insightful look at how some of the world's leading practitioners construct and maintain software. This book covers Google's unique engineering culture, processes, and tools and how these aspects contribute to the effectiveness of an engineering organization. You'll explore three fundamental principles that software organizations should keep in mind when designing, architecting, writing, and maintaining code: How time affects the sustainability of software and how to make your code resilient over time How scale affects the viability of software practices within an engineering organization What trade-offs a typical engineer needs to make when evaluating design and development decisions

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.

Multi-Access Edge Computing in Action - Dario Sabella 2019-09-20

This book provides a complete and strategic overview of Multi-Access Edge Computing (MEC). It covers network and technology aspects, describes the market scenarios from the different stakeholders' point of view, and analyzes deployment aspects and actions to engage the ecosystem. MEC exists in and supports a highly complex "5G world" in which technologists and non-technology decision makers must act in concert and do so within a large interconnected ecosystem of which MEC is just one, albeit an important, part. Divided into three sections, with several chapters in each, the book addresses these three key aspects:

technology, markets, and ecosystems.

Cloud Native Transformation - Pini Reznik 2019-12-05

In the past few years, going cloud native has been a big advantage for many companies. But it's a tough technique to get right, especially for enterprises with critical legacy systems. This practical hands-on guide examines effective architecture, design, and cultural patterns to help you transform your organization into a cloud native enterprise—whether you're moving from older architectures or creating new systems from scratch. By following Wealth Grid, a fictional company, you'll understand the challenges, dilemmas, and considerations that accompany a move to the cloud. Technical managers and architects will learn best practices for taking on a successful company-wide transformation. Cloud migration consultants Pini Reznik, Jamie Dobson, and Michelle Gienow draw patterns from the growing community of expert practitioners and enterprises that have successfully built cloud native systems. You'll learn what works and what doesn't when adopting cloud native—including how this transition affects not just your technology but also your organizational structure and processes. You'll learn: What cloud native means and why enterprises are so interested in it Common barriers and pitfalls that have affected other companies (and how to avoid them) Context-specific patterns for a successful cloud native transformation How to implement a safe, evolutionary cloud native approach How companies addressed root causes and misunderstandings that hindered their progress Case studies from real-world companies that have succeeded with cloud native transformations

Exam Ref 70-535 Architecting Microsoft Azure Solutions - Haishi Bai 2018-06-04

Prepare for Microsoft Exam 70-535—and help demonstrate your real-world mastery of architecting complete cloud solutions on the Microsoft Azure platform. Designed for architects and other cloud professionals ready to advance their status, Exam Ref focuses on the critical thinking and decision-making acumen needed for success at the MCSA level. Focus on the expertise measured by these objectives: Design compute infrastructure Design data

implementation Design networking
implementation Design security and identity
solutions Design solutions by using platform
services Design for operations This Microsoft
Exam Ref: Organizes its coverage by exam skills
Features strategic, what-if scenarios to
challenge you Includes DevOps and hybrid
technologies and scenarios Assumes you have
experience building infrastructure and
applications on the Microsoft Azure platform,
and understand the services it offers
Data Professionals at Work - Malathi Mahadevan
2018-10-11

Enjoy reading interviews with more than two dozen data professionals to see a picture of what it's like to work in the industry managing and analyzing data, helping you to know what it takes to move from your current expertise into one of the fastest growing areas of technology today. Data is the hottest word of the century, and data professionals are in high demand. You may already be a data professional such as a database administrator or business intelligence analyst. Or you may be one of the many people who want to work as a data professional, and are curious how to get there. Either way, this collection helps you understand how data professionals work, what makes them successful, and what they do to keep up. You'll find interviews in this book with database administrators, database programmers, data architects, business intelligence professionals, and analytics professionals. Interviewees work across industry sectors ranging from healthcare and banking to finance and transportation and beyond. Each chapter illuminates a successful professional at the top of their game, who shares what helped them get to the top, and what skills and attitudes combine to make them successful in their respective fields. Interviewees in the book include: Mindy Curnutt, Julie Smith, Kenneth Fisher, Andy Leonard, Jes Borland, Kevin Feasel, Ginger Grant, Vicky Harp, Kendra Little, Jason Brimhall, Tim Costello, Andy Mallon, Steph Locke, Jonathan Stewart, Joseph Sack, John Q. Martin, John Morehouse, Kathi Kellenberger, Argenis Fernandez, Kirsten Benzel, Tracy Boggiano, Dave Walden, Matt Gordon, Jimmy May, Drew Furgiuele, Marlon Ribunal, and Joseph Fleming. All of them have been successful in their careers, and share their

perspectives on working and succeeding in the field as data and database professionals. What You'll Learn Stand out as an outstanding professional in your area of data work by developing the right set of skills and attitudes that lead to success Avoid common mistakes and pitfalls, and recover from operational failures and bad technology decisions Understand current trends and best practices, and stay out in front as the field evolves Break into working with data through database administration, business intelligence, or any of the other career paths represented in this book Manage stress and develop a healthy work-life balance no matter which career path you decide upon Choose a suitable path for yourself from among the different career paths in working with data Who This Book Is For Database administrators and developers, database and business intelligence architects, consultants, and analytic professionals, as well as those intent on moving into one of those career paths. Aspiring data professionals and those in related technical fields who want to make a move toward managing or analyzing data on a full-time basis will find the book useful. Existing data professionals who want to be outstanding and successful at what they do will also appreciate the book's advice and guidance.

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

Intelligent Automation with VMware - Ajit Pratap Kundan 2019-03-30

Use self-driven data centers to reduce management complexity by deploying Infrastructure as Code to gain value from investments. Key Features Add smart capabilities in VMware Workspace ONE to deliver customer insights and improve overall security Optimize your HPC and big data infrastructure with the help of machine learning Automate your VMware data center operations with machine learning Book Description This book presents an introductory perspective on how machine learning plays an important role in a VMware environment. It offers a basic understanding of how to leverage machine learning primitives, along with a deeper look into integration with the VMware tools used for automation today. This book begins by highlighting how VMware addresses business issues related to its workforce, customers, and partners with emerging technologies such as machine learning to create new, intelligence-driven, end user experiences. You will learn how to apply machine learning techniques incorporated in VMware solutions for data center operations. You will go through management toolsets with a focus on machine learning techniques. At the end of the book, you will learn how the new vSphere Scale-Out edition can be used to ensure that HPC, big data performance, and other requirements can be met (either through development or by fine-tuning guidelines) with mainstream products. What you will learn Orchestrate on-demand deployments based on defined policies Automate away common problems and make life easier by reducing errors Deliver services to end users rather than to virtual machines Reduce rework in a multi-layered scalable manner in any cloud Explore the centralized life cycle management of hybrid clouds Use common code so you can run it across any cloud Who this book is for This book is

intended for those planning, designing, and implementing the virtualization/cloud components of the Software-Defined Data Center foundational infrastructure. It helps users to put intelligence in their automation tasks to get self driving data center. It is assumed that the reader has knowledge of, and some familiarity with, virtualization concepts and related topics, including storage, security, and networking.

Cloud Computing Technologies for Green Enterprises - Munir, Kashif 2017-09-13

Emerging developments in cloud computing have created novel opportunities and applications for businesses. These innovations not only have organizational benefits, but can be advantageous for green enterprises as well. Cloud Computing Technologies for Green Enterprises is a pivotal reference source for the latest scholarly research on the advancements, benefits, and challenges of cloud computing for green enterprise endeavors. Highlighting pertinent topics such as resource allocation, energy efficiency, and mobile computing, this book is a premier resource for academics, researchers, students, professionals, and managers interested in novel trends in cloud computing applications.

A Practical Guide to Continuous Delivery - Eberhard Wolff 2017-02-24

Using Continuous Delivery, you can bring software into production more rapidly, with greater reliability. A Practical Guide to Continuous Delivery is a 100% practical guide to building Continuous Delivery pipelines that automate rollouts, improve reproducibility, and dramatically reduce risk. Eberhard Wolff introduces a proven Continuous Delivery technology stack, including Docker, Chef, Vagrant, Jenkins, Graphite, the ELK stack, JBehave, and Gatling. He guides you through applying these technologies throughout build, continuous integration, load testing, acceptance testing, and monitoring. Wolff's start-to-finish example projects offer the basis for your own experimentation, pilot programs, and full-fledged deployments. A Practical Guide to Continuous Delivery is for everyone who wants to introduce Continuous Delivery, with or without DevOps. For managers, it introduces core processes, requirements, benefits, and

technical consequences. Developers, administrators, and architects will gain essential skills for implementing and managing pipelines, and for integrating Continuous Delivery smoothly into software architectures and IT organizations. Understand the problems that Continuous Delivery solves, and how it solves them Establish an infrastructure for maximum software automation Leverage virtualization and Platform as a Service (PAAS) cloud solutions Implement build automation and continuous integration with Gradle, Maven, and Jenkins Perform static code reviews with SonarQube and repositories to store build artifacts Establish automated GUI and textual acceptance testing with behavior-driven design Ensure appropriate performance via capacity testing Check new features and problems with exploratory testing Minimize risk throughout automated production software rollouts Gather and analyze metrics and logs with Elasticsearch, Logstash, Kibana (ELK), and Graphite Manage the introduction of Continuous Delivery into your enterprise Architect software to facilitate Continuous Delivery of new capabilities

Docker Orchestration - Randall Smith

2017-01-24

A concise, fast-paced guide to orchestrating and deploying scalable services with Docker About This Book Explore the new features added to the core Docker Engine to make multi-container orchestration easy Leverage tools such as Docker Machine, Swarm, Compose, and third-party tools such as Kubernetes, Mesosphere, and CoreOS to orchestrate containers Use Docker Compose with Swarm and apply rolling updates for zero downtime deployments Who This Book Is For This book is aimed at Sysadmins and DevOps engineers who know what Docker does and are now looking to manage multiple containers on multiple hosts using the orchestration feature. What You Will Learn Build scalable, reliable services with Docker See how to manage a service in Docker using Docker Swarm, Kubernetes, and Mesosphere Discover simpler orchestration tools such as CoreOS/Fleet and Rancher Cattle Understand cluster-wide logging, system monitoring, and troubleshooting Build, test, and deploy containers using Continuous Integration Deploy cluster hosts on cloud services and automate your infrastructure

In Detail Docker orchestration is what you need when transitioning from deploying containers individually on a single host to deploying complex multi-container apps on many machines. This book covers the new orchestration features of Docker 1.12 and helps you efficiently build, test, and deploy your application using Docker. You will be shown how to build multi-container applications using Docker Compose. You will also be introduced to the building blocks for multi-host Docker clusters such as registry, overlay networks, and shared storage using practical examples. This book gives an overview of core tools such as Docker Machine, Swarm, and Compose which will enhance your orchestration skills. You'll learn how to set up a swarm using the decentralized building block. Next, you'll be shown how to make the most out of the in-built orchestration feature of Docker engine and you'll use third-party tools such as Kubernetes, Mesosphere, and CoreOS to orchestrate your existing process. Finally, you will learn to deploy cluster hosts on cloud services and automate your infrastructure. Style and approach This comprehensive guide will take you through the orchestration feature of Docker. Using practical examples, you will discover various tools that can be used to manage multiple containers with ease.

Migrating Applications to the Cloud with Azure - Sjoukje Zaal 2019-12-06

Modernize your apps with Microsoft Azure by moving web, desktop, and mobile apps to the cloud Key Features Decide which migration strategy is most suitable for your organization and create a migration roadmap Move existing infrastructure to Azure and learn strategies to reduce cost, increase storage, and improve ROI Design secure, scalable, and cost-effective solutions with the help of practical examples Book Description Whether you are trying to re-architect a legacy app or build a cloud-ready app from scratch, using the Azure ecosystem with .NET and Java technologies helps you to strategize and plan your app modernization process effectively. With this book, you'll learn how to modernize your applications by using Azure for containerization, DevOps, microservices, and serverless solutions to reduce development time and costs, while also making

your applications robust, secure, and scalable. You will delve into improving application efficiency by using container services such as Azure Container Service, Azure Kubernetes Service (AKS), and more. Next, you will learn to modernize your application by implementing DevOps throughout your application development life cycle. You will then focus on increasing the scalability and performance of your overall application with microservices, before learning how to add extra functionality to your application with Azure serverless solutions. Finally, you'll get up to speed with monitoring and troubleshooting techniques. By the end of this book, you will have learned how to use the Azure ecosystem to refactor, re-architect, and rebuild your web, mobile, and desktop applications. What you will learn Use DevOps and containerization technologies to modernize your applications and infrastructure Build microservices using Azure Service Fabric Develop scalable applications using Azure Functions Manage and deploy your application code and database connectivity Secure and monitor your applications in Azure effectively Design for high availability and disaster recovery Who this book is for This book is for .NET and Java developers who want to modernize their applications using Azure. Solution architects and experienced developers interested in modernizing legacy applications using Azure will also find this book useful. Some prior understanding of cloud computing concepts will be beneficial.

Hacking Kubernetes - Andrew Martin
2021-10-13

Want to run your Kubernetes workloads safely and securely? This practical book provides a threat-based guide to Kubernetes security. Each chapter examines a particular component's architecture and potential default settings and then reviews existing high-profile attacks and historical Common Vulnerabilities and Exposures (CVEs). Authors Andrew Martin and Michael Hausenblas share best-practice configuration to help you harden clusters from possible angles of attack. This book begins with a vanilla Kubernetes installation with built-in defaults. You'll examine an abstract threat model of a distributed system running arbitrary workloads, and then progress to a detailed

assessment of each component of a secure Kubernetes system. Understand where your Kubernetes system is vulnerable with threat modelling techniques Focus on pods, from configurations to attacks and defenses Secure your cluster and workload traffic Define and enforce policy with RBAC, OPA, and Kyverno Dive deep into sandboxing and isolation techniques Learn how to detect and mitigate supply chain attacks Explore filesystems, volumes, and sensitive information at rest Discover what can go wrong when running multitenant workloads in a cluster Learn what you can do if someone breaks in despite you having controls in place

Cloud Computing for Science and Engineering - Ian Foster 2017-09-29

A guide to cloud computing for students, scientists, and engineers, with advice and many hands-on examples. The emergence of powerful, always-on cloud utilities has transformed how consumers interact with information technology, enabling video streaming, intelligent personal assistants, and the sharing of content. Businesses, too, have benefited from the cloud, outsourcing much of their information technology to cloud services. Science, however, has not fully exploited the advantages of the cloud. Could scientific discovery be accelerated if mundane chores were automated and outsourced to the cloud? Leading computer scientists Ian Foster and Dennis Gannon argue that it can, and in this book offer a guide to cloud computing for students, scientists, and engineers, with advice and many hands-on examples. The book surveys the technology that underpins the cloud, new approaches to technical problems enabled by the cloud, and the concepts required to integrate cloud services into scientific work. It covers managing data in the cloud, and how to program these services; computing in the cloud, from deploying single virtual machines or containers to supporting basic interactive science experiments to gathering clusters of machines to do data analytics; using the cloud as a platform for automating analysis procedures, machine learning, and analyzing streaming data; building your own cloud with open source software; and cloud security. The book is accompanied by a website, Cloud4SciEng.org, that provides a

variety of supplementary material, including exercises, lecture slides, and other resources helpful to readers and instructors.

Getting Started with Istio Service Mesh -

Rahul Sharma 2019-12-05

Build an in-depth understanding of the Istio service mesh and see why a service mesh is required for a distributed application. This book covers the Istio architecture and its features using a hands-on approach with language-neutral examples. To get your Istio environment up and running, you will go through its setup and learn the concepts of control plane and data plane. You will become skilled with the new concepts and apply them with best practices to continuously deliver applications. What You Will Learn Discover the Istio architecture components and the Envoy proxy Master traffic management for service routing and application deployment Build application resiliency using timeout, circuit breakers, and connection pools Monitor using Prometheus and Grafana Configure application security Who This Book Is For Developers and project managers who are trying to run their application using Kubernetes. The book is not specific for any programming language even though all examples will be in Java or Python.

Introducing Azure Kubernetes Service -

Steve Buchanan 2019-12-09

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.

Handbook of Research on Multimedia Cyber Security -

Gupta, Brij B. 2020-04-03

Because it makes the distribution and transmission of digital information much easier and more cost effective, multimedia has emerged as a top resource in the modern era. In spite of the opportunities that multimedia creates for businesses and companies, information sharing remains vulnerable to cyber attacks and hacking due to the open channels in which this data is being transmitted. Protecting the authenticity and confidentiality of information is a top priority for all professional fields that currently use multimedia practices for distributing digital data. The Handbook of Research on Multimedia Cyber Security provides emerging research exploring the theoretical and practical aspects of current security practices and techniques within multimedia information and assessing modern challenges. Featuring coverage on a broad range of topics such as cryptographic protocols, feature extraction, and chaotic systems, this book is ideally designed for scientists, researchers, developers, security analysts, network administrators, scholars, IT professionals, educators, and students seeking current research on developing strategies in multimedia security.

Docker: Up & Running -

Sean P. Kane 2018-09-07

Docker is rapidly changing the way organizations deploy software at scale. However, understanding how Linux containers fit into your workflow—and getting the integration details right—is not a trivial task. With the updated edition of this practical guide, you'll learn how to use Docker to package your applications with all of their dependencies and then test, ship, scale, and support your containers in production. This edition includes significant updates to the

examples and explanations that reflect the substantial changes that have occurred over the past couple of years. Sean Kane and Karl Matthias have added a complete chapter on Docker Compose, deeper coverage of Docker Swarm mode, introductions to both Kubernetes and AWS Fargate, examples on how to optimize your Docker images, and much more. Learn how Docker simplifies dependency management and deployment workflow for your applications Start working with Docker images, containers, and command line tools Use practical techniques to deploy and test Docker containers in production Debug containers by understanding their composition and internal processes Deploy production containers at scale inside your data center or cloud environment Explore advanced Docker topics, including deployment tools, networking, orchestration, security, and configuration

PHP Microservices - Carlos Perez Sanchez
2017-03-29

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

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

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

Sustained Simulation Performance 2019 and 2020 - Michael M. Resch 2021-04-02

This book presents the state of the art in High

Performance Computing on modern supercomputer architectures. It addresses trends in hardware and software development in general. The contributions cover a broad range of topics, from performance evaluations in context with power efficiency to Computational Fluid Dynamics and High Performance Data Analytics. In addition, they explore new topics like the use of High Performance Computers in the field of Artificial Intelligence and Machine Learning. All contributions are based on selected papers presented at the 30th Workshop on Sustained Simulation Performance (WSSP) held at the High Performance Computing Center, University of Stuttgart, Germany in October 2019 and on the papers for the planned Workshop on Sustained Simulation Performance in March 2020, which could not take place due to the Covid-19 pandemic.

Spring 5.0 Microservices - Rajesh R V
2017-07-13

A practical, comprehensive, and user-friendly approach to building microservices in Spring About This Book Update existing applications to integrate reactive streams released as a part of Spring 5.0 Learn how to use Docker and Mesos to push the boundaries and build successful microservices Upgrade the capability model to implement scalable microservices Who This Book Is For This book is ideal for Spring developers who want to build cloud-ready, Internet-scale applications, and simple RESTful services to meet modern business demands. What You Will Learn Familiarize yourself with the microservices architecture and its benefits Find out how to avoid common challenges and pitfalls while developing microservices Use Spring Boot and Spring Cloud to develop microservices Handle logging and monitoring microservices Leverage Reactive Programming in Spring 5.0 to build modern cloud native applications Manage internet-scale microservices using Docker, Mesos, and Marathon Gain insights into the latest inclusion of Reactive Streams in Spring and make applications more resilient and scalable In Detail The Spring Framework is an application framework and inversion of the control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions to build web applications on

top of the Java EE platform. This book will help you implement the microservice architecture in Spring Framework, Spring Boot, and Spring Cloud. Written to the latest specifications of Spring that focuses on Reactive Programming, you'll be able to build modern, internet-scale Java applications in no time. The book starts off with guidelines to implement responsive microservices at scale. Next, you will understand how Spring Boot is used to deploy serverless autonomous services by removing the need to have a heavyweight application server. Later, you'll learn how to go further by deploying your microservices to Docker and managing them with Mesos. By the end of the book, you will have gained more clarity on the implementation of microservices using Spring Framework and will be able to use them in internet-scale deployments through real-world examples. Style and approach The book takes a step-by-step approach on developing microservices using Spring Framework, Spring Boot, and a set of Spring Cloud components that will help you scale your applications.

Cloud Computing for Machine Learning and Cognitive Applications - Kai Hwang

2017-07-07

The first textbook to teach students how to build data analytic solutions on large data sets using cloud-based technologies. This is the first textbook to teach students how to build data analytic solutions on large data sets (specifically in Internet of Things applications) using cloud-based technologies for data storage, transmission and mashup, and AI techniques to analyze this data. This textbook is designed to train college students to master modern cloud computing systems in operating principles, architecture design, machine learning algorithms, programming models and software tools for big data mining, analytics, and cognitive applications. The book will be suitable for use in one-semester computer science or electrical engineering courses on cloud computing, machine learning, cloud programming, cognitive computing, or big data science. The book will also be very useful as a reference for professionals who want to work in cloud computing and data science. Cloud and Cognitive Computing begins with two introductory chapters on fundamentals of cloud

computing, data science, and adaptive computing that lay the foundation for the rest of the book. Subsequent chapters cover topics including cloud architecture, mashup services, virtual machines, Docker containers, mobile clouds, IoT and AI, inter-cloud mashups, and cloud performance and benchmarks, with a focus on Google's Brain Project, DeepMind, and X-Lab programs, IBKai HwangM SyNapsee, Bluemix programs, cognitive initiatives, and neurocomputers. The book then covers machine learning algorithms and cloud programming software tools and application development, applying the tools in machine learning, social media, deep learning, and cognitive applications. All cloud systems are illustrated with big data and cognitive application examples.

Efficient Go - Bartłomiej Plotka 2022-11-09

With technological advancements, fast markets, and higher complexity of systems, software engineers tend to skip the uncomfortable topic of software efficiency. However, tactical, observability-driven performance optimizations are vital for every product to save money and ensure business success. With this book, any engineer can learn how to approach software efficiency effectively, professionally, and without stress. Author Bartłomiej Plotka provides the tools and knowledge required to make your systems faster and less resource-hungry. Efficient Go guides you in achieving better day-to-day efficiency using Go. In addition, most content is language-agnostic, allowing you to bring small but effective habits to your programming or product management cycles. This book shows you how to: Clarify and negotiate efficiency goals Optimize efficiency on various levels Use common resources like CPU and memory effectively Assess efficiency using observability signals like metrics, logging, tracing, and (continuous) profiling via open source projects like Prometheus, Jaeger, and Parca Apply tools like go test, pprof, benchstat, and k6 to create reliable micro and macro benchmarks Efficiently use Go and its features like slices, generics, goroutines, allocation semantics, garbage collection, and more!

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.

Docker: Up and Running - Karl Matthias
2015-06-25

Quickly learn how to use Docker and containers in general to create packaged images for easy management, testing, and deployment of software. This practical guide lets you hit the ground running by demonstrating how Docker allows developers to package their application with all of its dependencies and to test and then ship the exact same bundle to production. You'll also learn how Docker enables operations engineers to help the development team quickly iterate on their software. Learn Docker's philosophy, design, and intent Use your own custom software to build Docker images Launch Docker images as running containers Explore advanced Docker concepts and topics Get valuable references to related tools in the Docker ecosystem

Microservices - Eberhard Wolff 2016-10-03
The Most Complete, Practical, and Actionable Guide to Microservices Going beyond mere theory and marketing hype, Eberhard Wolff presents all the knowledge you need to capture

the full benefits of this emerging paradigm. He illuminates microservice concepts, architectures, and scenarios from a technology-neutral standpoint, and demonstrates how to implement them with today's leading technologies such as Docker, Java, Spring Boot, the Netflix stack, and Spring Cloud. The author fully explains the benefits and tradeoffs associated with microservices, and guides you through the entire project lifecycle: development, testing, deployment, operations, and more. You'll find best practices for architecting microservice-based systems, individual microservices, and nanoservices, each illuminated with pragmatic examples. The author supplements opinions based on his experience with concise essays from other experts, enriching your understanding and illuminating areas where experts disagree. Readers are challenged to experiment on their own the concepts explained in the book to gain hands-on experience.

Discover what microservices are, and how they differ from other forms of modularization Modernize legacy applications and efficiently build new systems Drive more value from continuous delivery with microservices Learn how microservices differ from SOA Optimize the microservices project lifecycle Plan, visualize, manage, and evolve architecture Integrate and communicate among microservices Apply advanced architectural techniques, including CQRS and Event Sourcing Maximize resilience and stability Operate and monitor microservices in production Build a full implementation with Docker, Java, Spring Boot, the Netflix stack, and Spring Cloud Explore nanoservices with Amazon Lambda, OSGi, Java EE, Vert.x, Erlang, and Seneca Understand microservices' impact on teams, technical leaders, product owners, and stakeholders Managers will discover better ways to support microservices, and learn how adopting the method affects the entire organization. Developers will master the technical skills and concepts they need to be effective. Architects will gain a deep understanding of key issues in creating or migrating toward microservices, and exactly what it will take to transform their plans into reality.

Energy Informatics - Sebastian Gottwalt
2016-01-05

This book constitutes the refereed proceedings of the 4th D-A-CH Conference on Energy Informatics, D-A-CH EI 2015, held in Karlsruhe, Germany, in November 2015. The 18 revised full papers presented were carefully reviewed and selected from 36 submissions. The papers are organized in topical sections on distributed energy sources and storage, smart meters and monitoring, research lab infrastructures, electric mobility, communication and security, and modeling and simulation.

Big-Data Analytics for Cloud, IoT and Cognitive Computing - Kai Hwang 2017-03-17

The definitive guide to successfully integrating social, mobile, Big-Data analytics, cloud and IoT principles and technologies. The main goal of this book is to spur the development of effective big-data computing operations on smart clouds that are fully supported by IoT sensing, machine learning and analytics systems. To that end, the authors draw upon their original research and proven track record in the field to describe a practical approach integrating big-data theories, cloud design principles, Internet of Things (IoT) sensing, machine learning, data analytics and Hadoop and Spark programming. Part 1 focuses on data science, the roles of clouds and IoT devices and frameworks for big-data computing. Big data analytics and cognitive machine learning, as well as cloud architecture, IoT and cognitive systems are explored, and mobile

cloud-IoT-interaction frameworks are illustrated with concrete system design examples. Part 2 is devoted to the principles of and algorithms for machine learning, data analytics and deep learning in big data applications. Part 3 concentrates on cloud programming software libraries from MapReduce to Hadoop, Spark and TensorFlow and describes business, educational, healthcare and social media applications for those tools. The first book describing a practical approach to integrating social, mobile, analytics, cloud and IoT (SMACT) principles and technologies. Covers theory and computing techniques and technologies, making it suitable for use in both computer science and electrical engineering programs. Offers an extremely well-informed vision of future intelligent and cognitive computing environments integrating SMACT technologies. Fully illustrated throughout with examples, figures and approximately 150 problems to support and reinforce learning. Features a companion website with an instructor manual and PowerPoint slides. www.wiley.com/go/hwangIOT Big-Data Analytics for Cloud, IoT and Cognitive Computing satisfies the demand among university faculty and students for cutting-edge information on emerging intelligent and cognitive computing systems and technologies. Professionals working in data science, cloud computing and IoT applications will also find this book to be an extremely useful working resource.