The Docker Book Containerization Is The New Virtualization

Giving you the confidence you need to take on Docker in the real world, this guide is the ultimate book for learning Docker, brought to you by Docker Captain and leading educator in the container ecosystem. --
A new book by James Turnbull designed for SysAdmins, Operations staff, Developers and DevOps who are interested in deploying the open source container service Docker.
Secure your applications and development environments with Docker and Kubernetes DESCRIPTION Through this book, we will introduce the DevOps tools ecosystem and the main containers orchestration tools through an introduction to some platforms such as Kubernetes, Docker Swarm, and OpenShift. Among other topics, both good practices will be addressed when constructing the Docker images as well as best security practices to be applied at the level of the host in which those containers are executed, from Docker's own daemon to the rest of the components that make up its technological stack. We will review the topics such as static analysis of vulnerabilities on Docker images, the signing of images with Docker Content Trust and their subsequent publication in a Docker Registry will be addressed. Also, we will review the security state in Kubernetes. In the last section, we will review container management and administration open source tools for IT organizations that need to manage and monitor container-based applications, reviewing topics such as monitoring, administration, and networking in Docker. KEY FEATURES - Introducing Container platforms (Docker, Kubernetes, Swarm, OpenShift) - Discover how to manage high availability with Docker Swarm and Kubernetes - Learn how Docker can manage the security in images and containers - Discover how Docker can be integrated into development workflows in applications - Discover vulnerabilities in the Docker containers and images with practical examples to secure your container-based applications - Discover tools for monitoring and administration Docker and Kubernetes applications WHAT WILL YOU LEARN - Learn fundamental DevOps skills and tools, starting with the basic components and concepts of Docker. - Learn about Docker as a platform for the deployment of containers and Docker images taking into account the security of applications. - Learn about tools that allow us to audit the security of the machine where we execute Docker images, finding out how to secure your Docker host. - Learn how to secure your Docker environment and discover vulnerabilities and threats in Docker images. - Learn about creating and deploying containers in a security way with Docker and Kubernetes. - Learn about monitoring and administration in Docker with tools such as cadvisor, sysdig, portainer, and Rancher. WHO THIS BOOK IS FOR This book covers different techniques to help developers improve DevOps and container security skills and can be useful for people who are involved in software development and want to learn how Docker works from a security point of view. It is recommended that readers have the knowledge about UNIX commands and they work with commands terminal. TABLE OF CONTENTS 1. Getting started with DevOps 2. Container platforms 3. Managing Containers and Docker images 4. Getting started with Docker security 5. Docker host security 6. Docker images security 7. Auditing and analyzing vulnerabilities in Docker containers 8. Kubernetes security 9. Docker container networking 10. Docker container monitoring 11. Docker container administration
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
Whether you're deploying applications on-premise or in the cloud, this cookbook is for developers, operators, and IT professionals who need practical solutions for using Docker. The recipes in this book will help developers go from zero knowledge to distributed applications packaged and deployed within a couple of chapters. IT professionals will be able to use this cookbook to solve everyday problems, as well as create, run, share, and deploy Docker images quickly. Operators will learn and understand what developers are excited about and start to adopt the tools that will change the way they work.--
Leverage Docker to deploying software at scale Key Features Leverage practical examples to manage containers efficiently Integrate with orchestration tools such as Kubernetes for controlled deployments Learn to implement best practices on improving efficiency and security of containers Book Description Docker is an open source platform for building, shipping, managing, and securing containers. Docker has become the tool of choice for people willing to work with containers. Since the market is moving toward containerization, Docker will definitely have a big role to play in the future tech market. This book starts with setting up Docker in different environment, and helps you learn how to work with Docker images. Then, you will take a deep dive into network and data management for containers. The book explores the RESTful APIs provided by Docker to perform different actions, such as image/container operations. The book then explores logs and troubleshooting Docker to solve issues and bottlenecks. You will gain an understanding of Docker use cases, orchestration, security, ecosystems, and hosting platforms to make your applications easy to deploy, build, and collaborate on. The book covers the new features of Docker 18.xx (or later), such as working with AWS and Azure, Docker Engine, Docker Swarm, Docker Compose, and so on. By the end of this book, you will have gained hands-on

experience of finding quick solutions to different problems encountered while working with Docker. What you will learn Install Docker on various platforms Work with Docker images and containers Container networking and data sharing Docker APIs and language bindings Various PaaS solutions for Docker Implement container orchestration using Docker Swarm and Kubernetes Container security Docker on various clouds Who this book is for Book is targeted towards developers, system administrators, and DevOps engineers who want to use Docker in his/her development, QA, or production environments. It is expected that the reader has basic Linux/Unix skills such as installing packages, editing files, managing services, and so on. Any experience in virtualization technologies such as KVM, XEN, and VMware will be an added advantage

Even small applications have dozens of components. Large applications may have thousands, which makes them challenging to install, maintain, and remove. Docker bundles all application components into a package called a container that keeps things tidy and helps manage any dependencies on other applications or infrastructure. Docker in Action, Second Edition teaches you the skills and knowledge you need to create, deploy, and manage applications hosted in Docker containers. This bestseller has been fully updated with new examples, best practices, and entirely new chapters. You'll start with a clear explanation of the Docker model and learn how to package applications in containers, including techniques for testing and distributing applications. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications.

Find out how to use Docker in your ASP.NET Core MVC applications, and how containers make it easier to develop, deploy and manage those applications in production environments. Packed with examples and practical demonstrations, this book will help you deploy even large-scale, cross-platform web applications from development into production. Best-selling author Adam Freeman takes you on a whirlwind tour of Docker, from creating a consistent development environment for your team to deploying a project and scaling it up in production. By the end of the book, you will have a solid understanding of what Docker does, how it does it and why it is useful when developing and deploying ASP.NET Core MVC applications. What You Will Learn Gain a solid understanding of Docker: what it is, and why you should be using it for your ASP.NET Core MVC applications Use Docker to create a development platform for ASP.NET Core MVC so that applications behave consistently across development and production Use Docker to test, deploy and manage ASP.NET Core MVC containers Use Docker Swarms to scale up applications to cope with large workloads Who This Book Is For ASP.NET Core MVC developers who want to use Docker to containerize and manage their applications Change the way your organization deploys software at scale with this fast-paced guide to the world of Docker About This Book Cut through the noise and in simple terms learn to package your applications and test, ship, and scale your containers Find and build images and successfully run your programs within containers Build, deploy, and test your Docker containers and put them to work in production Who This Book Is For This book is for IT professionals, system administrators, and DevOps professionals or anyone looking to quickly develop and deploy software to production at scale. If you are interested in Docker, DevOps, or containers in general, don't look any further. What You Will Learn Understand Docker's architecture Build, ship, and run distributed applications Deploy, automate, and manage the execution of applications within Docker Scale and virtualize images and containers Utilize the networking features that Docker offers Use repositories to store and retrieve images In Detail This fast-paced practical guide will get you up and running with Docker. Using Docker, you will be able to build, ship, and run many distributed applications in real time. You will start with quickly installing Docker and start working with images and containers. We will present different types of containers and their applications, and show you how to find and build images. You will learn how you can contribute to the image repository by publishing different images. This will familiarize you with the image building process and you will be able to successfully run your programs within containers. By finishing this book, you will be well equipped in deploying your applications using Docker and will have a clear understanding of concepts, techniques, and practical methods to get it running in production systems. Style and approach This book takes a fast-paced practical approach that quickly gets you up and running with Docker so that you spend less time learning and more time deploying Docker containers effectively. This book contains a mix of concepts, practical examples, techniques, and the most up-to-date content to run things effectively in production. We'll show you the easiest way to speed up your development and deployment with Docker.

It can be tough to roll out a pre-configured environment if you don't know what you're doing. We'll show you how to streamline your service options with Docker, so that you can scale in an agile, responsive manner. Key Features Learn how to structure your own Docker containers Create and manage multiple configuration images Understand how to scale and deploy bespoke environments Book Description Making sure that your application runs across different systems as intended is quickly becoming a standard development requirement. With Docker, you can ensure that what you build will behave the way you expect it to, regardless of where it's deployed. By guiding you through Docker from start to finish (from installation, to the Docker Registry, all the way through to working with Docker Swarms), we'll equip you with the skills you need to migrate your workflow to Docker with complete confidence. What you will learn Learn to design and build containers for different kinds of applications Create a testing environment to identify issues that may cause production deployments to fail Discover how you can correctly structure and manage a multi-tier environment Run, debug, and experiment with example applications in Docker containers Who this book is for This book is ideal for developers, system architects and site reliability engineers (SREs) who wish to adopt a Docker-based workflow for consistency, speed and isolation of system resources within their applications. You'll need to be comfortable working with the command line.

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.

Start deploying, managing, and scaling containerized applications into AWS container infrastructure using Docker on Amazon EC2, Amazon Elastic Container Service (ECS), and AWS Elastic Kubernetes Service (EKS). This step by step practical book will cover all the available container services on AWS and review the usage of each one based on your required scale and cost. Further, you will see how to set up each environment and finally deploy, manage, and scale containerized applications on each

one. In the chapter about Elastic Kubernetes Service (EKS), you will learn the process of building and managing Kubernetes clusters on AWS and see how to provision hosts in a matter of minutes, while deploying containers in seconds and making them available globally. Deploy Containers on AWS shows you how to get started with AWS container offerings and manage production or test environments of containerized applications using a hands-on approach with step-by-step instructions. What You Will Learn Deploy and manage containers with Docker on Amazon EC2 Store and retrieve container images using the Amazon EC2 container registry Orchestrate containers with Amazon Elastic Container Service (ECS) Run Kubernetes-managed infrastructure on AWS (EKS) Monitor, manage, back up, and restore containers on AWS Who This Book Is ForDevelopers, cloud and systems administrators, and architects

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

Docker is a next-generation platform for simplifying application containerization life-cycle. Docker allows you to create a robust and resilient environment in which you can generate portable, composable, scalable, and stable application containers. This book is a step-by-step guide that will walk you through the various features of Docker from Docker software installation to the impenetrable security of containers. The book starts off by elucidating the installation procedure for Docker and a few troubleshooting techniques. You will be introduced to the process of downloading Docker images and running them as containers. You'll learn how to run containers as a service (CaaS) and also discover how to share data among containers. Later on, you'll explore how to establish the link between containers and orchestrate containers using Docker Compose. You will also come across relevant details about application testing inside a container. You will discover how to debug a container using the docker exec command and the nsenter tool. Finally, you will learn how to secure your containers with SELinux and other proven methods.

Keen to build web applications for the cloud? Get a quick hands-on introduction to OpenShift, the open source Platform as a Service (PaaS) offering from Red Hat. With this practical guide, you'll learn the steps necessary to build, deploy, and host a complete real-world application on OpenShift without having to slog through long, detailed explanations of the technologies involved. OpenShift enables you to use Docker application containers and the Kubernetes cluster manager to automate the way you create, ship, and run applications. Through the course of the book, you'll learn how to use OpenShift and the Wildfly application server to build and then immediately deploy a Java application online. Learn about OpenShift's core technology, including Docker-based containers and Kubernetes Use a virtual machine with OpenShift installed and configured on your local environment Create and deploy your first application on the OpenShift platform Add language runtime dependencies and connect to a database Trigger an automatic rebuild and redeployment when you push changes to the repository Get a working environment up in minutes with application templates Use commands to check and debug your application Create and build Docker-based images for your application

Learn the key differences between containers and virtual machines. Adopting a project based approach, this book introduces you to a simple Python application to be developed and containerized with Docker. After an introduction to Containers and Docker you'll be guided through Docker installation and configuration. You'll also learn basic functions and commands used in Docker by running a simple container using Docker commands. The book then moves on to developing a Python based Messaging Bot using required libraries and virtual environment where you'll add Docker Volumes to your project, ensuring your container data is safe. You'll create a database container and link your project to it and finally, bring up the Bot-associated database all at once with Docker Compose. What You'll Learn Build, run, and distribute Docker containers Develop a Python App and containerize it Use Dockerfile to run the Python App Define and run multi-container applications with Docker Compose Work with persisting data generated by and used by Docker containers Who This Book Is For Intermediate developers/DevOps practitioners who are looking to improve their build and release workflow by containerizing applications

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

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.

Summary Go from zero to production readiness with Docker in 22 bite-sized lessons! Learn Docker in a Month of Lunches is an accessible task-focused guide to Docker on Linux, Windows, or Mac systems. In it, you'll learn practical Docker skills to help you tackle the challenges of modern IT, from cloud migration and microservices to handling legacy systems. There's no excessive theory or niche-use cases—just a quick-and-easy guide to the essentials of Docker you'll use every day. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology The idea behind Docker is simple: package applications in lightweight virtual containers that can be easily installed. The results of this simple idea are huge! Docker makes it possible to manage applications without creating custom infrastructures. Free, open source, and battle-tested, Docker has quickly become must-know technology for developers and administrators. About the book Learn Docker in a Month of Lunches introduces Docker concepts through a series of brief hands-on lessons. Following a learning path perfected by author Elton Stoneman, you'll run containers by chapter 2 and package applications by chapter 3. Each lesson teaches a practical skill you can practice on Windows, macOS, and Linux systems. By the end of the month you'll know how to containerize and run any kind of application with Docker. What's inside Package applications to run in containers Put containers into production Build optimized Docker images Run containerized apps at scale About the reader For IT professionals. No previous Docker experience required. About the author Elton Stoneman is a consultant, a former architect at Docker, a Microsoft MVP, and a Pluralsight author. Table of Contents PART 1 - UNDERSTANDING DOCKER CONTAINERS AND IMAGES 1. Before you begin 2. Understanding Docker and running Hello World 3. Building your own Docker images 4. Packaging applications from source code into Docker Images 5. Sharing images with Docker Hub and other registries 6. Using Docker volumes for persistent storage PART 2 - RUNNING DISTRIBUTED APPLICATIONS IN CONTAINERS 7. Running multi-container apps with Docker Compose 8. Supporting reliability with health checks and dependency checks 9. Adding observability with containerized monitoring 10. Running multiple environments with Docker Compose 11. Building and testing applications with Docker and Docker Compose PART 3 - RUNNING AT SCALE WITH A CONTAINER ORCHESTRATOR 12. Understanding orchestration: Docker Swarm and Kubernetes 13. Deploying distributed applications as stacks in Docker Swarm 14. Automating releases with upgrades and rollbacks 15. Configuring Docker for secure remote access and CI/CD 16. Building Docker images that run anywhere: Linux, Windows, Intel, and Arm PART 4 - GETTING YOUR CONTAINERS READY FOR PRODUCTION 17. Optimizing your Docker images for size, speed, and security 18. Application configuration management in containers 19. Writing and managing application logs with Docker 20. Controlling HTTP traffic to containers with a reverse proxy 21. Asynchronous communication with a message queue 22. Never the end

Unleash the combination of Docker and Jenkins in order to enhance the DevOps workflow About This Book Build reliable and secure applications using Docker containers. Create a complete Continuous Delivery pipeline using Docker, Jenkins, and Ansible. Deliver your applications directly on the Docker Swarm cluster. Create more complex solutions using multi-containers and database migrations. Who This Book Is For This book is indented to provide a full overview of deep learning. From the beginner in deep learning and artificial intelligence to the data scientist who wants to become familiar with Theano and its supporting libraries, or have an extended understanding of deep neural nets. Some basic skills in Python programming and computer science will help, as well as skills in elementary algebra and calculus. What You Will Learn Get to grips with docker fundamentals and how to dockerize an application for the Continuous Delivery process Configure Jenkins and scale it using Docker-based agents Understand the principles and the technical aspects of a successful Continuous Delivery pipeline Create a complete Continuous Delivery process using modern tools: Docker, Jenkins, and Ansible Write acceptance tests using Cucumber and run them in the Docker ecosystem using Jenkins Create multi-container applications using Docker Compose Managing database changes inside the Continuous Delivery process and understand effective frameworks such as Cucumber and Flyweight Build clustering applications with Jenkins using Docker Swarm Publish a built Docker image to a Docker Registry and deploy cycles of Jenkins pipelines using community best practices In Detail The combination of Docker and Jenkins improves your Continuous Delivery pipeline using fewer resources. It also helps you scale up your builds, automate tasks and speed up Jenkins performance with the benefits of Docker containerization. This book will explain the advantages of combining Jenkins and Docker to improve the continuous integration and delivery process of app development. It will start with setting up a Docker server and configuring Jenkins on it. It will then provide steps to build applications on Docker files and integrate them with Jenkins using continuous delivery processes such as continuous integration, automated acceptance testing, and configuration management. Moving on you will learn how to ensure quick application deployment with Docker containers along with scaling Jenkins using Docker Swarm. Next, you will get to know how to deploy applications using Docker images and testing them with Jenkins. By the end of the book, you will be enhancing the DevOps workflow by integrating the functionalities of Docker and Jenkins. Style and approach The book is aimed at DevOps Engineers, developers and IT Operations who want to enhance the DevOps culture using Docker and Jenkins.

The Docker BookContainerization Is the New VirtualizationJames Turnbull

Explore the core functionality of containerizing your applications and making them production-ready Key Features Grasp basic to advanced Docker concepts with this comprehensive guide Get acquainted with Docker containers, Docker images, orchestrators, cloud integration, and networking Learn to simplify dependencies and deploy and test containers in production Book Description Containers enable you to package an application with all the components it needs, such as libraries and other dependencies, and ship it as one package. Docker containers have revolutionized the software supply chain in both small and large enterprises. Starting with an introduction to Docker fundamentals and setting up an environment to work with it, you'll delve into concepts such as Docker containers, Docker images, and Docker Compose. As you progress, the book will help you explore deployment, orchestration, networking, and security. Finally, you'll get to grips with Docker functionalities on public clouds such as Amazon Web Services (AWS), Azure, and Google Cloud Platform (GCP), and learn about Docker Enterprise Edition features. Additionally, you'll also discover the benefits of increased security with the use of containers. By the end of this Docker book, you'll be able to build, ship, and run a containerized, highly distributed application on Docker Swarm or Kubernetes, running on-premises or in the cloud. What you will learn Containerize your traditional or microservice-based applications Develop, modify, debug, and test an application running inside a container 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 with encapsulation, networks, and secrets Troubleshoot a containerized, highly distributed application in the cloud Who this book is for This book is for Linux professionals, 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. Users with a Linux system would be able to take full advantage of this book.

Unleash the combination of Docker and Jenkins in order to enhance the DevOps workflowAbout This Book* Build reliable and secure applications using Docker containers.* Create a complete Continuous Delivery pipeline using Docker, Jenkins, and Ansible.* Deliver your applications directly on the Docker Swarm cluster.* Create more complex solutions using multi-containers and database migrations.Who This Book Is ForThis book is indented to provide a full overview of deep learning. From the beginner in deep learning and artificial intelligence to the data scientist who wants to become familiar with Theano and its supporting libraries, or have an extended understanding of deep neural

nets.Some basic skills in Python programming and computer science will help, as well as skills in elementary algebra and calculus.What You Will Learn* Get to grips with docker fundamentals and how to dockerize an application for the Continuous Delivery process* Configure Jenkins and scale it using Docker-based agents* Understand the principles and the technical aspects of a successful Continuous Delivery pipeline* Create a complete Continuous Delivery process using modern tools: Docker, Jenkins, and Ansible* Write acceptance tests using Cucumber and run them in the Docker ecosystem using Jenkins* Create multi-container applications using Docker Compose* Managing database changes inside the Continuous Delivery process and understand effective frameworks such as Cucumber and Flyweight* Build clustering applications with Jenkins using Docker Swarm* Publish a built Docker image to a Docker Registry and deploy cycles of Jenkins pipelines using community best practicesIn DetailThe combination of Docker and Jenkins improves your Continuous Delivery pipeline using fewer resources. It also helps you scale up your builds, automate tasks and speed up Jenkins performance with the benefits of Docker containerization.This book will explain the advantages of combining Jenkins and Docker to improve the continuous integration and delivery process of app development. It will start with setting up a Docker server and configuring Jenkins on it. It will then provide steps to build applications on Docker files and integrate them with Jenkins using continuous delivery processes such as continuous integration, automated acceptance testing, and configuration management.Moving on you will learn how to ensure quick application deployment with Docker containers along with scaling Jenkins using Docker Swarm. Next, you will get to know how to deploy applications using Docker images and testing them with Jenkins.By the end of the book, you will be enhancing the DevOps workflow by integrating the functionalities of Docker and Jenkins.Style and approachThe book is aimed at DevOps Engineers, developers and IT Operations who want to enhance the DevOps culture using Docker and Jenkins.

Develop and build your Docker images and deploy your Docker containers securely. Key Features Learn Docker installation on different types of OS Get started with developing Docker images Use Docker with your Jenkins CI/CD system Book Description Docker is an open source software platform that helps you with creating, deploying, and running your applications using containers. This book is your ideal introduction to Docker and containerization. You will learn how to set up a Docker development environment on a Linux, Mac, or Windows workstation, and learn your way around all the commands to run and manage your Docker images and containers. You will explore the Dockerfile and learn how to build your own enterprise-grade Docker images. Then you will learn about Docker networks, Docker swarm, and Docker volumes, and how to use these features with Docker stacks in order to define, deploy, and maintain highly-scalable, fault-tolerant multi-container applications. Finally, you will learn how to leverage Docker with Jenkins to automate the building of Docker images and the deployment of Docker containers. By the end of this book, you will be well prepared when it comes to using Docker for your next project. What you will learn Set up your Docker workstation on various platforms Utilize a number of Docker commands with parameters Create Docker images using Dockerfiles Learn how to create and use Docker volumes Deploy multi-node Docker swarm infrastructure Create and use Docker local and remote networks Deploy multi-container applications that are HA and FT Use Jenkins to build and deploy Docker images Who this book is for This guide is for anyone who needs to make a quick decision about using Docker for their next project. It is for developers who want to get started using Docker right away.

With the help of top-notch examples and activities, this workshop helps you to get practical with Docker containers. You'll learn its usage, advantages, and best practices to make the software deployment process smoother.

Learn how to deploy and test Linux-based Docker containers with the help of real-world use cases Key Features Understand how to make a deployment workflow run smoothly with Docker containers Learn Docker and DevOps concepts such as continuous integration and continuous deployment (CI/CD) Gain insights into using various Docker tools and libraries Book Description Docker is the de facto standard for containerizing apps, and with an increasing number of software projects migrating to containers, it is crucial for engineers and DevOps teams to understand how to build, deploy, and secure Docker environments effectively. Docker for Developers will help you understand Docker containers from scratch while taking you through best practices and showing you how to address security concerns. Starting with an introduction to Docker, you'll learn how to use containers and VirtualBox for development. You'll explore how containers work and develop projects within them after you've explored different ways to deploy and run containers. The book will also show you how to use Docker containers in production in both single-host set-ups and in clusters and deploy them using Jenkins, Kubernetes, and Spinnaker. As you advance, you'll get to grips with monitoring, securing, and scaling Docker using tools such as Prometheus and Grafana. Later, you'll be able to deploy Docker containers to a variety of environments, including the cloud-native Amazon Elastic Kubernetes Service (Amazon EKS), before finally delving into Docker security concepts and best practices. By the end of the Docker book, you'll be able to not only work in a container-driven environment confidently but also use Docker for both new and existing projects. What you will learn Get up to speed with creating containers and understand how they work Package and deploy your containers to a variety of platforms Work with containers in the cloud and on the Kubernetes platform Deploy and then monitor the health and logs of running containers Explore best practices for working with containers from a security perspective Become familiar with scanning containers and using third-party security tools and libraries Who this book is for If you're a software engineer new to containerization or a DevOps engineer responsible for deploying Docker containers in the cloud and building DevOps pipelines for container-based projects, you'll find this book useful. This Docker containers book is also a handy reference guide for anyone working with a Docker-based DevOps ecosystem or interested in understanding the security implications and best practices for working in container-driven environments.

Leverage the lethal combination of Docker and Kubernetes to automate deployment and management of Java applications About This Book Master using Docker and Kubernetes to build, deploy and manage Java applications in a jiff Learn how to create your own Docker image and customize your own cluster using Kubernetes Empower the journey from development to production using this practical guide. Who This Book Is For The book is aimed at Java developers who are eager to build, deploy, and manage applications very quickly using container technology. They need have no knowledge of Docker and Kubernetes. What You Will Learn Package Java applications into Docker images Understand the running of containers locally Explore development and deployment options with Docker Integrate Docker into Maven builds Manage and monitor Java applications running on Kubernetes clusters Create Continuous Delivery pipelines for Java applications deployed to Kubernetes In Detail Imagine creating and testing Java EE applications on Apache Tomcat Server or Wildfly Application server in minutes along with deploying and managing Java applications swiftly. Sounds too good to be true? But you have a reason to cheer as such scenarios are only possible by leveraging Docker and Kubernetes. This book will start by introducing Docker and delve deep into its networking and persistent storage concepts. You will then proceed to learn how to refactor monolith application into separate services by building an application and then packaging it into Docker containers. Next, you will create an image containing Java Enterprise Application and later run it using Docker. Moving on, the book will focus on Kubernetes and its features and you will learn to deploy a Java application to Kubernetes using Maven and monitor a Java application in production. By the end of the book, you will get hands-on with some more advanced topics to further extend your knowledge about Docker and Kubernetes. Style and approach An easy-to-follow, practical guide that will help Java developers develop, deploy, and manage Java applications efficiently.

Build robust and secure applications using the building blocks of Docker Key Features ? Understand the fundamentals of Containers. ? Understand the working of the entire Docker ecosystem. ? Learn how to utilize Docker Networking capabilities to its fullest. ? Learn how to secure Docker Containers. ? Get familiar and work with Docker Enterprise Edition. Description The book starts by introducing Containers and explains how they are different from virtual machines, and why they are the preferred tool for developing applications. You will understand the

working of Images, Containers, and their associated Storage and will see how all the moving parts bind together to work synchronously. The book will then focus on Docker Swarm, the mechanism for orchestrating several running Docker containers. It then delves deeper into Docker Networking. Towards the end, you will learn how to secure your applications, especially by leveraging the native features of Docker Enterprise Edition. What will you learn ? Learn how to use Docker Images. ? Get to know more about Docker Storage. ? Learn how to use Volume plugins in Docker services. ? Learn how to deploy a service to the Swarm. ? Learn how to manage, scale, and maintain containerized applications. Who this book is for This book is for anyone who is looking to learn Docker. It is also useful for professionals who are looking to build and deploy web apps using Docker. Table of Contents 1. Introduction to Containerization and Docker 2. Containers and Images 3. Storage Drivers and Volumes 4. The Container Network Model and the Docker Bridge 5. Docker Swarm 6. Docker Networking 7. Docker Security-1 8. Docker Security-II

Deploy and execute Microsoft Azure container and containerized applications on Azure. This second book in author Shimon Ifrah's series on containers will help you manage and scale containers along with their applications, tools and services. You'll start by setting up the Azure environment and quickly work through techniques and methods of managing container images with Azure Container Registry (ACR). As you move forward, deploying containerized applications with Azure container instances and Azure Kubernetes Service is discussed in detail, and in the process, you'll see how to install Docker container host on Azure Virtual Machine. This is followed by a discussion on security in Azure containers where you'll learn how to monitor containers and containerized applications backed by illustrative examples. Next, you will review how to scale containers along with methods for backing up and restoring containers and containerized applications on Azure. Towards the end, the book demonstrates troubleshooting applications and Docker container host issues in Azure. Getting Started with Containers in Azure will equip you to deploy, manage and secure containerized applications using Azure tools and services for containers. What You'll Learn Explore containers on Microsoft Azure. Store Docker images on Azure Container Registry Automate deployment of container services using Azure CLI and Azure Cloud Shell Use Azure Container Instances (ACI) for smaller deployment Who This Book Is For Azure administrators, developers, and architects who want to get started and learn more about containers and containerized applications on Microsoft Azure.

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.

Transition to Microservices and DevOps to Transform Your Software Development Effectiveness Thanks to the tech sector's latest game-changing innovations—the Internet of Things (IoT), software-enabled networking, and software as a service (SaaS), to name a few—there is now a seemingly insatiable demand for platforms and architectures that can improve the process of application development and deployment. In Microservices and Containers, longtime systems architect and engineering team leader Parminder Kocher analyzes two of the hottest new technology trends: microservices and containers. Together, as Kocher demonstrates, microservices and Docker containers can bring unprecedented agility and scalability to application development and deployment, especially in large, complex projects where speed is crucial but small errors can be disastrous. Learn how to leverage microservices and Docker to drive modular architectural design, on-demand scalability, application performance and reliability, time-to-market, code reuse, and exponential improvements in DevOps effectiveness. Kocher offers detailed guidance and a complete roadmap for transitioning from monolithic architectures, as well as an in-depth case study that walks the reader through the migration of an enterprise-class SOA system. Understand how microservices enable you to organize applications into standalone components that are easier to manage, update, and scale Decide whether microservices and containers are worth your investment, and manage the organizational learning curve associated with them Apply best practices for interprocess communication among microservices Migrate monolithic systems in an orderly fashion Understand Docker containers, installation, and interfaces Network, orchestrate, and manage Docker containers effectively Use Docker to maximize scalability in microservices-based applications Apply your learning with an in-depth, hands-on case study Whether you are a software architect/developer or systems professional looking to move on from older approaches or a manager trying to maximize the business value of these technologies, Microservices and Containers will be an invaluable addition to your library. Register your product at informit.com/register for convenient access to downloads, updates, and/or corrections as they become available.

Get SQL Server up and running on the Linux operating system and containers. No database professional managing or developing SQL Server on Linux will want to be without this deep and authoritative guide by one of the most respected experts on SQL Server in the industry. Get an inside look at how SQL Server for Linux works through the eyes of an engineer on the team that made it possible. Microsoft SQL Server is one of the leading database platforms in the industry, and SQL Server 2017 offers developers and administrators the ability to run a database management system on Linux, offering proven support for enterprise-level features and without onerous licensing terms. Organizations invested in Microsoft and open source technologies are now able to run a unified database platform across all their operating system investments. Organizations are further able to take full advantage of containerization through popular platforms such as Docker and Kubernetes. Pro SQL Server on Linux walks you through installing and configuring SQL Server on the Linux platform. The author is one of the principal architects of SQL Server for Linux, and brings a corresponding depth of knowledge that no database professional or developer on Linux will want to be without. Throughout this book are internals of how SQL Server on Linux works including an in depth look at the innovative architecture. The book covers day-to-day management and troubleshooting, including diagnostics and monitoring, the use of containers to manage deployments, and the use of self-tuning and the in-memory capabilities. Also covered are performance capabilities, high availability, and disaster recovery along with security and encryption. The book covers the product-specific knowledge to bring SQL Server and its powerful features to life on the Linux platform, including coverage of containerization through Docker and Kubernetes. What You'll Learn Learn about the history and internal of the unique SQL Server on Linux architecture. Install and configure Microsoft's flagship database product on the Linux platform Manage your deployments using container technology through Docker and Kubernetes Know the basics of building databases, the T-SQL language, and developing applications against SQL Server on Linux Use tools and features to diagnose, manage, and monitor SQL Server on Linux Scale your application by learning the performance capabilities of SQL Server Deliver high availability and disaster recovery to ensure business continuity Secure your database from attack, and protect sensitive data through encryption Take advantage of powerful features such as Failover Clusters, Availability Groups, In-Memory Support, and SQL Server's Self-Tuning Engine Learn how to migrate your database from older releases of SQL Server and other database platforms such as Oracle and PostgreSQL Build and maintain schemas, and perform management tasks from both GUI and command line Who This Book Is For

Developers and IT professionals who are new to SQL Server and wish to configure it on the Linux operating system. This book is also useful to those familiar with SQL Server on Windows who want to learn the unique aspects of managing SQL Server on the Linux platform and Docker containers. Readers should have a grasp of relational database concepts and be comfortable with the SQL language.
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
Docker is an open platform for developers and sysadmins to build, ship, and run distributed applications, whether on laptops, data center VMs, or the cloud.This book introduces Docker to an Absolute Beginner using really simple and easy to understand lectures. This course is designed for beginners in DevOps.Who this book is for: System AdministratorsCloud Infrastructure EngineersDeveloper
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.
Updated for Docker Community Edition v18.09! Docker book designed for SysAdmins, SREs, Operations staff, Developers and DevOps who are interested in deploying the open source container service Docker. In this book, we'll walk you through installing, deploying, managing, and extending Docker. We're going to do that by first introducing you to the basics of Docker and its components. Then we'll start to use Docker to build containers and services to perform a variety of tasks. We're going to take you through the development lifecycle, from testing to production, and see where Docker fits in and how it can make your life easier. We'll make use of Docker to build test environments for new projects, demonstrate how to integrate Docker with continuous integration workflow, and then how to build application services and platforms. Finally, we'll show you how to use Docker's API and how to extend Docker yourself. We'll teach you how to: * Install Docker. * Take your first steps with a Docker container. * Build Docker images. * Manage and share Docker images. * Run and manage more complex Docker containers. * Deploy Docker containers as part of your testing pipeline. * Build multi-container applications and environments. * Learn about orchestration using Compose and Swarm for the orchestration of Docker containers and Consul for service discovery. * Explore the Docker API. * Getting Help and Extending Docker.
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
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.

Learn how to run new and old Windows applications in Docker containers. About This Book Package traditional .NET Frameworks apps and new .NET Core apps as Docker images, and run them in containers for increased efficiency, portability, and security Design and implement distributed applications that run across connected containers, using enterprise-grade open source software from public Docker images Build a full Continuous Deployment pipeline for a .NET Framework application, and deploy it to a highly-available Docker swarm running in the cloud Who This Book Is For If you want to modernize an old monolithic application without rewriting it, smooth the deployment to production, or move to DevOps or the cloud, then Docker is the enabler for you. This book gives you a solid grounding in Docker so you can confidently approach all of these scenarios. What You Will Learn Comprehend key Docker concepts: images, containers, registries, and swarms Run Docker on Windows 10, Windows Server 2016, and in the cloud Deploy and monitor distributed solutions across multiple Docker containers Run containers with high availability and fail-over with Docker Swarm Master security in-depth with the Docker platform, making your apps more secure Build a Continuous Deployment pipeline by running Jenkins in Docker Debug applications running in Docker containers using Visual Studio Plan the adoption of Docker in your own organization In Detail Docker is a platform for running server applications in lightweight units called containers. You can run Docker on Windows Server 2016 and Windows 10, and run your existing apps in containers to get significant improvements in efficiency, security, and portability. This book teaches you all you need to know about Docker on Windows, from 101 to deploying highly-available workloads in production. This book takes you on a Docker journey, starting with the key concepts and simple examples of how to run .NET Framework and .NET Core apps in Windows Docker containers. Then it moves on to more complex examples—using Docker to modernize the architecture and development of traditional ASP.NET and SQL Server apps. The examples show you how to break up monoliths into distributed apps and deploy them to a clustered environment in the cloud, using the exact same artifacts you use to run them locally. To help you move confidently to production, it then explains Docker security, and the management and support options. The book finishes with guidance on getting started with Docker in your own projects, together with some real-world case studies for Docker implementations, from small-scale on-premises apps to very large-scale apps running on Azure. Style and approach Using a step-by-step approach, this book shows you how to use Docker on Windows. It includes practical examples and real-world technical and business scenarios that will help you effectively implement Docker in your environment.There are over 50 examples of Dockerized applications, using C# .NET projects as the source and packaging them into Docker images.