

Linux Containers Overview Docker Kubernetes And Atomic

Take container cluster management to the next level; learn how to administer and configure Kubernetes on CoreOS; and apply suitable management design patterns such as Configmaps, Autoscaling, elastic resource usage, and high availability. Some of the other features discussed are logging, scheduling, rolling updates, volumes, service types, and multiple cloud provider zones. The atomic unit of modular container service in Kubernetes is a Pod, which is a group of containers with a common filesystem and networking. The Kubernetes Pod abstraction enables design patterns for containerized applications similar to object-oriented design patterns. Containers provide some of the same benefits as software objects such as modularity or packaging, abstraction, and reuse. CoreOS Linux is used in the majority of the chapters and other platforms discussed are CentOS with OpenShift, Debian 8 (jessie) on AWS, and Debian 7 for Google Container Engine. CoreOS is the main focus because Docker is pre-installed on CoreOS out-of-the-box. CoreOS: Supports most cloud providers (including Amazon AWS EC2 and Google Cloud Platform) and virtualization platforms (such as VMWare and VirtualBox) Provides Cloud-Config for declaratively configuring for OS items such as network configuration (flannel), storage (etcd), and user accounts Provides a production-level infrastructure for containerized applications including automation, security, and scalability Leads the drive for container industry standards and founded appc Provides the most advanced container registry, Quay Docker was made available as open source in March 2013 and has become the most commonly used containerization platform. Kubernetes was open-sourced in June 2014 and has become the most widely used container cluster manager. The first stable version of CoreOS Linux was made available in July 2014 and since has become one of the most commonly used operating system for containers. What You'll Learn Use Kubernetes with Docker Create a Kubernetes cluster on CoreOS on AWS Apply cluster management design patterns Use multiple cloud provider zones Work with Kubernetes and tools like Ansible Discover the Kubernetes-based PaaS platform OpenShift Create a high availability website Build a high availability Kubernetes master cluster Use volumes, configmaps, services, autoscaling, and rolling updates Manage compute resources Configure logging and scheduling Who This Book Is For Linux admins, CoreOS admins, application developers, and container as a service (CAAS) developers. Some pre-requisite knowledge of Linux and Docker is required. Introductory knowledge of Kubernetes is required such as creating a cluster, creating a Pod, creating a service, and creating and scaling a replication controller. For introductory Docker and Kubernetes information, refer to Pro Docker (Apress) and Kubernetes Microservices with Docker (Apress). Some pre-requisite knowledge about using Amazon Web Services (AWS) EC2, CloudFormation, and VPC is also required.

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 In the race to compete in today's fast-moving markets, large enterprises are busy adopting new technologies for creating new products, processes, and business models. But one obstacle on the road to digital transformation is placing too much emphasis on technology, and not enough on the types of processes technology enables. What if different lines of business could build their own services and applications—and decision-making was distributed rather than centralized? This report explores the concept of a digital business platform as a way of empowering individual business sectors to act on data in real time. Much innovation in a digital enterprise will increasingly happen at the edge, whether it involves business users (from marketers to data scientists) or IoT devices. To facilitate the process, your core IT team can provide these sectors with the digital tools they need to innovate quickly. This report explores: Key cultural and organizational changes for developing business capabilities through cross-functional product teams A platform for integrating applications, data sources, business partners, clients, mobile apps, social networks, and IoT devices Creating internal API programs for building innovative edge services in low-code or no-code environments Tools including Integration Platform as a Service, Application Platform as a Service, and Integration Software as a Service The challenge of integrating microservices and serverless architectures Event-driven architectures for processing and reacting to events in real time You'll also learn about a complete pervasive integration solution as a core component of a digital business platform to serve every audience in your organization.

Strategically design, troubleshoot, and automate Docker containers from development to deployment About This Book* Develop, test, automate, and deploy production-ready Docker containers* Utilize current and emergent technologies for effective Docker orchestration and management* A step-by-step guide to diagnosing and fixing problems with Docker containers Who This Book Is For This book is intended for seasoned solutions architects, developers, and programmers, system engineers, and administrators to help you troubleshoot common areas of

Docker containerization. If you are looking to build production-ready Docker containers for automated deployment, you will be able to master and troubleshoot both the basic functions and the advanced features of Docker. Advanced familiarity with the Linux command line syntax, unit testing, the Docker Registry, Github, and leading container hosting platforms and Cloud Service Providers (CSP) are the prerequisites. What You Will Learn* Install Docker ecosystem tools and services* Test, troubleshoot, and automate the image building process* Design and implement Microservices and N-tier applications* Create re-usable, portable containers* Network and inter-link containers* Attach volumes securely to containers* Consume and troubleshoot Docker APIs* Orchestrate and manage containers with Docker Machine, Compose, and Swarm* Update, maintain, and secure containers

In Detail Docker is an open source, container-based virtualization platform that enables anyone to consistently develop and deploy stable applications anywhere. Docker delivers speed, simplicity, and security in creating scalable, portable environments for ultramodern applications. With the advent and prevalence of Docker in the containerization of modern microservices and n-tier applications, it is both prudent and imperative to effectively troubleshoot automated workflows for production-level deployments. This book will traverse some common best practices for complex application scenarios where troubleshooting can be successfully employed to provide the repeatable processes and advantages that containers can deliver. By sequentially working through the real-world production scenarios throughout the book, you will gain insight into and mastery of common areas not only for effective troubleshooting, but ways to avoid troubleshooting in the first place. This book will ensure your success with this emergent technology into tested, automated real-world deployment.

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.

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.

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.

A practical book which will help the readers understand how the container ecosystem and OpenStack work together. About This Book Gets you acquainted with containerization in private cloud Learn to effectively manage and secure your containers in OpenStack Practical use cases on container deployment and management using OpenStack components Who This Book Is For This book is targeted towards cloud engineers, system administrators, or anyone from the production team who works on OpenStack cloud. This book act as an end to end guide for anyone who wants to start using the concept of containerization on private cloud. Some basic knowledge of Docker and Kubernetes will help. What You Will Learn Understand the role of containers in the OpenStack ecosystem Learn about containers and different types of container runtimes tools. Understand containerization in OpenStack with respect to the deployment framework, platform services, application deployment, and security Get skilled in using OpenStack to run your applications inside containers Explore the best practices of using containers in OpenStack. In Detail Containers are one of the most talked about technologies of recent times. They have become increasingly popular as they are changing the way we develop, deploy, and

run software applications. OpenStack gets tremendous traction as it is used by many organizations across the globe and as containers gain in popularity and become complex, it's necessary for OpenStack to provide various infrastructure resources for containers, such as compute, network, and storage. Containers in OpenStack answers the question, how can OpenStack keep ahead of the increasing challenges of container technology? You will start by getting familiar with container and OpenStack basics, so that you understand how the container ecosystem and OpenStack work together. To understand networking, managing application services and deployment tools, the book has dedicated chapters for different OpenStack projects: Magnum, Zun, Kuryr, Murano, and Kolla. Towards the end, you will be introduced to some best practices to secure your containers and COE on OpenStack, with an overview of using each OpenStack projects for different use cases. Style and approach An end to end guide for anyone who wants to start using the concept of containerization on private cloud.

Selling your CTO on the merits of OpenShift and Kubernetes is only the beginning. To operate and scale OpenShift, you also need to know how to manage and expose resources to application teams and continuously deliver changes to the applications running in these environments. With this practical book, new and experienced developers and operators will learn specific techniques for operationalizing OpenShift and Kubernetes in the enterprise. Industry experts Michael Elder, Jake Kitchener, and Brad Topol show you how to run OpenShift and Kubernetes in production and deliver your applications to a highly available, secure, and scalable platform. You'll learn how to build a strong foundation in advanced cluster operational topics, such as tenancy management, scheduling and capacity management, cost management, continuous delivery, and more. Examine the fundamental concepts of Kubernetes architecture Get different Kubernetes and OpenShift environments up and running Dive into advanced resource management topics, including capacity planning Learn how to support high availability inside a single cluster Use production-level approaches for continuous delivery and code promotion across clusters Explore hybrid cloud use cases, including multicloud provisioning, upgrading, and policy support Devise and deliver disaster recovery strategies 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.

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.

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

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.

For many organizations, a big part of DevOps' appeal is software automation using infrastructure-as-code techniques. This book presents developers, architects, and infra-ops engineers with a more practical option. You'll learn how a container-centric approach from OpenShift, Red Hat's cloud-based PaaS, can help your team deliver quality software through a self-service view of IT infrastructure. Three OpenShift experts at Red Hat explain how to configure Docker application containers and the Kubernetes cluster manager with OpenShift's developer- and operational-centric tools. Discover how this infrastructure-agnostic container management platform can help companies navigate the murky area where infrastructure-as-code ends and application automation begins. Get an application-centric view of automation—and understand why it's important Learn patterns and practical examples for managing continuous deployments such as rolling, A/B, blue-green, and canary Implement continuous integration pipelines with OpenShift's Jenkins capability Explore mechanisms for separating and managing configuration from static runtime software Learn how to use and customize OpenShift's source-to-image capability Delve into management and operational considerations when working with OpenShift-based application workloads Install a self-contained local version of the OpenShift environment on your computer

The Practical Guide to Running Docker on Linux Systems or Cloud Environments Whether on your laptop or a remote cloud, Docker can transform how you create, test, deploy, and manage your most critical applications. In Docker Containers, Christopher Negus helps you master Docker containerization from the ground up. You'll start out running a few Docker container images in Ubuntu, Fedora, RHEL, CoreOS, or Project Atomic. By the time you've finished, you'll be deploying enterprise-quality, multi-container Kubernetes setups in modern Linux and cloud environments. Writing for system administrators, software developers, and technology enthusiasts, Negus touches on every aspect of working with Docker: setting up containerized applications, working with both individual and multiple containers, running containers in cloud environments, and developing containers. Teaching through realistic examples of desktop applications, system services, and games, Negus guides you through building and deploying your own Dockerized applications. As you build your expertise, you'll also learn indispensable Docker best practices for building and integrating containers, managing Docker on a day-to-day basis, and much more:

- Understanding what Docker is and what you can do with it
- Installing Docker on standard Linux or specialized container operating systems such as Atomic Host and CoreOS
- Setting up a container runtime environment and private Docker Registry
- Creating, running, and investigating Docker images and containers
- Finding, pulling, saving, loading, and tagging container images
- Pulling and pushing containers between local systems and Docker Registries
- Integrating Docker containers with host networking and storage
- Building containers with the docker build command and Dockerfile files
- Minimizing space consumption and erasing unneeded containers
- Accessing special host privileges from within a container
- Orchestrating multiple containers into complex applications with Kubernetes
- Using super privileged containers in cloud environments
- Managing containers in the cloud with Cockpit
- Getting started with Docker container development
- Learning container build techniques from shared Dockerfiles

This book is part of the Pearson Content Update Program. As the technology changes, sections of this book will be updated or new sections will be added. The updates will be delivered to you via a free Web Edition of this book, which can be accessed with any Internet connection.

Secure your applications and development environments with Docker and Kubernetes Key Features

- a- Introducing Container platforms (Docker, Kubernetes, Swarm, OpenShift)
- a- Discover how to manage high availability with Docker Swarm and Kubernetes
- a- Learn how Docker can manage the security in images and containers
- a- Discover how Docker can be integrated into development workflows in applications
- a- Discover vulnerabilities in the Docker containers and images with practical examples to secure your container-based applications
- a- Discover tools for monitoring and administration Docker and Kubernetes applications

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.

What will you learn

- a- Learn fundamental DevOps skills and tools, starting with the basic components and concepts of Docker.
- a- Learn about Docker as a platform for the deployment of containers and Docker images taking into account the security of applications.
- a- 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.
- a- Learn how to secure your Docker environment and discover vulnerabilities and threats in Docker images.
- a- Learn about creating and deploying containers in a security way with Docker and Kubernetes.
- a- 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.

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10. Docker container monitoring
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About the Author Jose Manuel Ortega is a software engineer and security researcher with a special focus on new technologies, open source, security and testing. In recent years, he is interested in security development, especially with Python and security best practices with Docker and Kubernetes. Conferences and talks related with python, security and docker are available on his personal website <http://jmortega.github.io>. Your Blog links: <http://jmortega.github.io>/Your LinkedIn Profile: <https://www.linkedin.com/in/jmortega1/>

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

Deploying applications on Kubernetes clusters

Understanding the Kubernetes app lifecycle, from packaging to rollbacks

Self-healing and scalable apps

Using Kubernetes as a platform for new technologies

About the reader For readers familiar with Docker and containerization. About the author Elton Stoneman is a Docker Captain, a 11-time Microsoft MVP, and the author of Learn Docker in a Month of Lunches.

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If you're reading this then you're interested in learning about Docker and how it works! Operators use Docker to run and manage apps side by side in isolated containers to get better compute density. Enterprises use Docker to build agile software delivery pipelines to ship new features faster, more securely and of confidence for both Linux and Windows software. Instances of images are called containers; they are the objects you'll deal with most. Containers are completely isolated environments; they can have their own processes for services, their own network interfaces, their own mounts just like washing machines except they all share the same OS kernel. An image is a package or a template just like a VM template that you might have worked with in the virtualization world. It is used to create one or more containers. Containers are running instances of images that are isolated and have their own environments and set of processes. In this book, we are coming up with an introduction and technical information about Docker. Everything is well explained in layman terms to help beginners learn, understand and master Docker very fast. This is a preview of what you will learn:

- What containers are
- What Docker is
- Why you might need it
- What it can do for you
- How to run a Docker container
- How to build your own Docker image
- Networking in Docker
- How to use Docker compose
- What Docker registry is
- How to

deploy your own private registry - Docker for Windows and Mac - Introduction to container orchestration tools like Docker swarm and Kubernetes - And much more! Scroll up and click the BUY NOW button to get started.

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

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

The Practical Guide to Running Docker on Linux Systems or Cloud Environments Whether on your laptop or a remote cloud, Docker can transform how you create, test, deploy, and manage your most critical applications. In Docker Containers, Christopher Negus helps you master Docker containerization from the ground up. You'll start out running a few Docker container images in Ubuntu, Fedora, RHEL, CoreOS, or Project Atomic. By the time you've finished, you'll be deploying enterprise-quality, multi-container Kubernetes setups in modern Linux and cloud environments. Writing for system administrators, software developers, and technology enthusiasts, Negus touches on every aspect of working with Docker: setting up containerized applications, working with both individual and multiple containers, running containers in cloud environments, and developing containers. Teaching through realistic examples of desktop applications, system services, and games, Negus guides you through building and deploying your own Dockerized applications. As you build your expertise, you'll also learn indispensable Docker best practices for building and integrating containers, managing Docker on a day-to-day basis, and much more: * Understanding what Docker is and what you can do with it * Installing Docker on standard Linux or specialized container operating systems such as Atomic Host and CoreOS * Setting up a container runtime environment and private Docker Registry * Creating, running, and investigating Docker images and containers * Finding, pulling, saving, loading, and tagging container images * Pulling and pushing containers between local systems and Docker Registries * Integrating Docker containers with host networking and storage * Building containers with the docker build command and Dockerfile files * Minimizing space consumption and erasing unneeded containers * Accessing special host privileges from within a container * Orchestrating multiple containers into complex applications with Kubernetes * Using super privileged containers in cloud environments * Managing containers in the cloud with Cockpit * Getting started with Docker container development * Learning container build techniques from shared Dockerfiles This book is part of the Pearson Content Update Program. As the technology changes, sections of this book will be updated or new sections will be added. The updates will be delivered to you via a free Web Edition of this book, which can be accessed with any Internet connection.

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.

Become familiar with Kubernetes and explore techniques to manage your containerized workloads and services Key Features Learn everything from creating a cluster to monitoring applications in Kubernetes Understand and develop DevOps primitives using Kubernetes Use Kubernetes to solve challenging real-life DevOps problems Book Description Kubernetes and DevOps are the two pillars that can keep your business at the top by ensuring high performance of your IT infrastructure. Introduction to DevOps with Kubernetes will help you develop the skills you need to improve your DevOps with the power of Kubernetes. The book begins with an overview of Kubernetes primitives and DevOps concepts. You'll understand how Kubernetes can assist you with overcoming a wide range of real-world operation challenges. You will get to grips with creating and upgrading a cluster, and then learn how to deploy, update, and scale an application on Kubernetes. As you advance through the chapters, you'll be able to monitor an application by setting up a pod failure alert on Prometheus. The book will also guide you in configuring Alertmanager to send alerts to the Slack channel and trace down a problem on the application using kubectl commands. By the end of this book, you'll be able to manage the lifecycle of simple to complex applications on Kubernetes with confidence. What you will learn Create and manage Kubernetes clusters in on-premise systems and cloud Exercise various DevOps practices using Kubernetes Explore configuration, secret, and storage management, and exercise these on Kubernetes Perform different update techniques and apply them on Kubernetes Use the built-in scaling feature in Kubernetes to scale your applications up and down Use various troubleshooting techniques and have a

monitoring system installed on Kubernetes Who this book is for If you are a developer who wants to learn how to apply DevOps patterns using Kubernetes, then this book is for you. Familiarity with Kubernetes will be useful, but not essential.

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.

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

Not everything about computers and software these days is related to packaging, but a lot is. How can users acquire software faster and run it more easily? How should software be packaged up so that we can run it wherever we like? How do we resolve the tensions between the siren song of public cloud convenience and open source freedom and flexibility? In this book, Red Hat's Gordon Haff and William Henry take you on a journey through the history of packaging, pointing out along the way the clear parallels to how software packaging has evolved and continues to evolve. The retail industry and other packaging pioneers have had many lessons to teach and much to say about how we should think about software packaging. Today, open source software innovations in automation, container platforms, and assured software supply chains increasingly support the user directly, rather than just serving as a way to box up some bits. They simplify, integrate, and improve the overall software experience in the way that consumers accustomed to smartphones and on-demand content expect.

Operators are a way of packaging, deploying, and managing Kubernetes applications. A Kubernetes application doesn't just run on Kubernetes; it's composed and managed in

Kubernetes terms. Operators add application-specific operational knowledge to a Kubernetes cluster, making it easier to automate complex, stateful applications and to augment the platform. Operators can coordinate application upgrades seamlessly, react to failures automatically, and streamline repetitive maintenance like backups. Think of Operators as site reliability engineers in software. They work by extending the Kubernetes control plane and API, helping systems integrators, cluster administrators, and application developers reliably deploy and manage key services and components. Using real-world examples, authors Jason Dobies and Joshua Wood demonstrate how to use Operators today and how to create Operators for your applications with the Operator Framework and SDK. Learn how to establish a Kubernetes cluster and deploy an Operator Examine a range of Operators from usage to implementation Explore the three pillars of the Operator Framework: the Operator SDK, the Operator Lifecycle Manager, and Operator Metering Build Operators from the ground up using the Operator SDK Build, package, and run an Operator in development, testing, and production phases Learn how to distribute your Operator for installation on Kubernetes clusters

Choose the smarter way to learn about containerizing your applications and running them in production. Key Features Deploy and manage highly scalable, containerized applications with Kubernetes Build high-availability Kubernetes clusters Secure your applications via encapsulation, networks, and secrets Book Description Kubernetes is an open source orchestration platform for managing containers in a cluster environment. This Learning Path introduces you to the world of containerization, in addition to providing you with an overview of Docker fundamentals. As you progress, you will be able to understand how Kubernetes works with containers. Starting with creating Kubernetes clusters and running applications with proper authentication and authorization, you'll learn how to create high-availability Kubernetes clusters on Amazon Web Services (AWS), and also learn how to use kubeconfig to manage different clusters. Whether it is learning about Docker containers and Docker Compose, or building a continuous delivery pipeline for your application, this Learning Path will equip you with all the right tools and techniques to get started with containerization. By the end of this Learning Path, you will have gained hands-on experience of working with Docker containers and orchestrators, including SwarmKit and Kubernetes. This Learning Path includes content from the following Packt products: Kubernetes Cookbook - Second Edition by Hideto Saito, Hui-Chuan Chloe Lee, and Ke-Jou Carol Hsu Learn Docker - Fundamentals of Docker 18.x by Gabriel N. Schenker What you will learn Build your own container cluster Run a highly distributed application with Docker Swarm or Kubernetes Update or rollback a distributed application with zero downtime Containerize your traditional or microservice-based application Build a continuous delivery pipeline for your application Track metrics and logs for every container in your cluster Implement container orchestration to streamline deploying and managing applications Who this book is for This beginner-level Learning Path is designed for system administrators, operations engineers, DevOps engineers, and developers who want to get started with Docker and Kubernetes. Although no prior experience with Docker is required, basic knowledge of Kubernetes and containers will be helpful.

Build robust and secure applications using the building blocks of DockerKey Featuresa- Understand the fundamentals of Containers.a- Understand the working of the entire Docker ecosystem.a- Learn how to utilize Docker Networking capabilities to its fullest.a- Learn how to secure Docker Containers.a- Get familiar and work with Docker Enterprise Edition.DescriptionThe 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 learna- Learn how to use Docker Images.a- Get to know more about Docker Storage.a- Learn how to use Volume plugins in Docker services.a- Learn how to deploy a service to the Swarm.a- Learn how to manage, scale, and maintain containerized applications.Who this book is forThis 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 Contents1. Introduction to Containerization and Docker2. Containers and Images3. Storage Drivers and Volumes4. The Container Network Model and the Docker Bridge5. Docker Swarm6. Docker Networking7. Docker Security-18. Docker Security-IIAbout the AuthorsSaibal Ghosh has spent a substantial part of his career working with databases. However, in the last few years, he gravitated towards the cloud, cloud security, and newer technologies like Docker and Kubernetes. He has developed a deep understanding of these concepts and technologies bolstered by the insight gained from many years of experience working with applications, databases, storage and infrastructure, and the understanding of how data is stored, moved, and secured.He currently works as a Principal Architect in Ericsson India Ltd. and spends a substantial amount of time playing around with Docker and Kubernetes. He holds numerous certifications around applications, databases, cloud, and cloud security and is also a member of Leader's Excellence, Harvard Square.Your LinkedIn Profile:<https://www.linkedin.com/in/saibal-ghosh-mle%E2%84%A0-ccsk-prince2-%C2%AE-469b0a7/>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

Overview Docker Containers LiveLessons takes you through your first experiences understanding, running, building and managing Docker containers. These hands-on lessons help you explore Docker containers, registries and run-time environments. Description With cloud computing, applications need to move around efficiently and run almost anywhere. In this video, learn how you can create containerized applications with Docker that are light-weight and portable. First, Chris shows you how to begin using Docker on Ubuntu, Red Hat Enterprise Linux, or Fedora systems (with options of Windows or Mac OS X). Then he shows how to pull and push Docker container images from and to Docker registries. The next few lessons get you started running and investigating how containers work. After that, the video shows you how to build your own Docker images. The video then touches on orchestration tools such as Kubernetes and GearD for deploying containers. And finally, it provides some tips for developing your own Docker containers. About the Instructor Christopher Negus is a certified RHCE instructor and principal technical writer for Red Hat, Inc. He is a Red Hat Certified Instructor (RHCI) and Red Hat Certified Examiner, (RHCX) and has certifications that include Red Hat Enterprise Virtualization (RHCVA), Red Hat Clustering and Storage management and Red Hat Enterprise Deployment and Systems Management. Christopher has authored dozens of books on Linux and open source software, including the Linux Bible , Red Hat Linux Bible , Linux Toolbox series, Linux Toys , and Live Linux CDs . At Red Hat, Chris is currently working on development projects that include technologies such as OpenStack, Red Hat Cloud Infrastructure, and Linux containers in Docker format. Earlier in his career, Chris worked at AT&T Bell Laboratories on the UNIX System V development team. Skill Level Beginner - Intermediate What You Will Learn What Docker is and what it is used for How to install and start up Docker in Ubuntu, Red Hat Enterprise Linux, Fedora and Project Atomic How to pull and push Docker images to and from Docker registries How to run, stop and restart Docker containers How to look inside Docker container to understand how they work How to tag, save and load Docker images How to monitor and clean up your Docker environments How to build images that include the software you want How to deal with networking, logging, storage and software repos with Docker containers How to...

Kubernetes and Docker - An Enterprise Guide Effectively containerize applications, integrate enterprise systems, and scale applications in your enterprise Packt Publishing Ltd 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

The Linux Programming Interface (TLPI) is the definitive guide to the Linux and UNIX programming interface—the interface employed by nearly every application that runs on a Linux or UNIX system. In this authoritative work, Linux programming expert Michael Kerrisk provides detailed descriptions of the system calls and library functions that you need in order to master the craft of system programming, and accompanies his explanations with clear, complete example programs. You'll find descriptions of over 500 system calls and library functions, and more than 200 example programs, 88 tables, and 115 diagrams. You'll learn how to: –Read and write files efficiently –Use signals, clocks, and timers –Create processes and execute programs –Write secure programs –Write multithreaded programs using POSIX threads –Build and use shared libraries –Perform interprocess communication using pipes, message queues, shared memory, and semaphores –Write network applications with the sockets API While The Linux Programming Interface covers a wealth of Linux-specific features, including epoll, inotify, and the /proc file system, its emphasis on UNIX standards (POSIX.1-2001/SUSv3 and POSIX.1-2008/SUSv4) makes it equally valuable to programmers working on other UNIX platforms. The Linux Programming Interface is the most comprehensive single-volume work on the Linux and UNIX programming interface, and a book that's destined to become a new classic.

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.

Kubernetes has become an essential part of the daily work for most system, network, and cluster administrators today. But to work effectively together on a production-scale Kubernetes system, they must be able to speak the same language. This book provides a clear guide to the layers of complexity and abstraction that come with running a Kubernetes network. Authors James Strong and Vallery Lancey bring you up to speed on the intricacies that Kubernetes has to offer for large container deployments. If you're to be effective in troubleshooting and maintaining a production cluster, you need to be well versed in the abstraction provided at each layer. This practical book shows you how. Learn the Kubernetes networking model Choose the best interface for your clusters from the CNCF Container Network Interface project Explore the networking and Linux primitives that power Kubernetes Quickly troubleshoot networking issues and prevent downtime Examine cloud networking and Kubernetes using the three major providers: Amazon Web Services, Google Cloud, and Microsoft Azure Learn the pros and cons of various network tools--and how to select the best ones for your stack

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.

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

This book presents new communication and networking technologies, an area that has gained significant research attention from both academia and industry in recent years. It also discusses the development of more intelligent and efficient communication technologies, which are an essential part of current day-to-day life, and reports on recent innovations in technologies, architectures, and standards relating to these technologies. The book includes research that spans a wide range of communication and networking technologies, including wireless sensor networks, big data, Internet of Things, optical and telecommunication networks, artificial intelligence, cryptography, next-generation networks, cloud computing, and natural language processing. Moreover, it focuses on novel solutions in the context of communication and networking challenges, such as optimization algorithms, network interoperability, scalable network clustering, multicasting and fault-tolerant techniques, network authentication mechanisms, and predictive analytics.

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