

The Practice Of Cloud System Administration Devops And Sre Practices For Web Services Volume 2

This book provides readers with an overview of Cloud Computing, starting with historical background on mainframe computers and early networking protocols, leading to current concerns such as hardware and systems security, performance, emerging areas of IoT, Edge Computing etc. Readers will benefit from the in-depth discussion of cloud computing usage and the underlying architecture, with focus on best practices for using a dynamic cloud infrastructure, cloud operations management and cloud security. The authors explain carefully the “why’s and how’s” of Cloud Computing, so engineers will find this book and invaluable introduction to the topic.

With platforms designed for rapid adaptation and failure recovery such as Amazon Web Services, cloud computing is more like programming than traditional system administration. Tools for automatic scaling and instance replacement allow even small DevOps teams to manage massively scalable application infrastructures—if team members drop their old views of development and operations and start mastering automation. This comprehensive guide shows developers and system administrators how to configure and manage AWS services including EC2, CloudFormation, Elastic Load Balancing, S3, and Route 53. Sysadms will learn will learn to automate their favorite tools and processes; developers will pick up enough ops knowledge to build a robust and resilient AWS application infrastructure. Launch instances with EC2 or CloudFormation Securely deploy and manage your applications with AWS tools Learn to

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automate AWS configuration management with Python and Puppet Deploy applications with Auto Scaling and Elastic Load Balancing Explore approaches for deploying application and infrastructure updates Save time on development and operations with reusable components Learn strategies for managing log files in AWS environments Configure a cloud-aware DNS service with Route 53 Use AWS CloudWatch to monitor your infrastructure and applications Cloud native infrastructure is more than servers, network, and storage in the cloud—it is as much about operational hygiene as it is about elasticity and scalability. In this book, you'll learn practices, patterns, and requirements for creating infrastructure that meets your needs, capable of managing the full life cycle of cloud native applications. Justin Garrison and Kris Nova reveal hard-earned lessons on architecting infrastructure from companies such as Google, Amazon, and Netflix. They draw inspiration from projects adopted by the Cloud Native Computing Foundation (CNCF), and provide examples of patterns seen in existing tools such as Kubernetes. With this book, you will: Understand why cloud native infrastructure is necessary to effectively run cloud native applications Use guidelines to decide when—and if—your business should adopt cloud native practices Learn patterns for deploying and managing infrastructure and applications Design tests to prove that your infrastructure works as intended, even in a variety of edge cases Learn how to secure infrastructure with policy as code

"This book bridges the gap between solutions and users' needs pertaining to the most relevant open source cloud technologies available today from a practical perspective"--

The militarized legacy of the digital cloud: how the cloud grew out of older network technologies and politics. We may imagine the digital cloud as placeless, mute, ethereal, and

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unmediated. Yet the reality of the cloud is embodied in thousands of massive data centers, any one of which can use as much electricity as a midsized town. Even all these data centers are only one small part of the cloud. Behind that cloud-shaped icon on our screens is a whole universe of technologies and cultural norms, all working to keep us from noticing their existence. In this book, Tung-Hui Hu examines the gap between the real and the virtual in our understanding of the cloud. Hu shows that the cloud grew out of such older networks as railroad tracks, sewer lines, and television circuits. He describes key moments in the prehistory of the cloud, from the game “Spacewar” as exemplar of time-sharing computers to Cold War bunkers that were later reused as data centers. Countering the popular perception of a new “cloudlike” political power that is dispersed and immaterial, Hu argues that the cloud grafts digital technologies onto older ways of exerting power over a population. But because we invest the cloud with cultural fantasies about security and participation, we fail to recognize its militarized origins and ideology. Moving between the materiality of the technology itself and its cultural rhetoric, Hu's account offers a set of new tools for rethinking the contemporary digital environment.

“There’s an incredible amount of depth and thinking in the practices described here, and it’s impressive to see it all in one place.” —Win Treese, coauthor of *Designing Systems for Internet Commerce* *The Practice of Cloud System Administration, Volume 2*, focuses on “distributed” or “cloud” computing and brings a DevOps/SRE sensibility to the practice of system administration. Unsatisfied with books that cover either design or operations in isolation, the authors created this authoritative reference centered on a comprehensive approach. Case studies and examples from Google, Etsy, Twitter, Facebook, Netflix, Amazon, and other

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industry giants are explained in practical ways that are useful to all enterprises. The new companion to the best-selling first volume, *The Practice of System and Network Administration, Second Edition*, this guide offers expert coverage of the following and many other crucial topics: Designing and building modern web and distributed systems
Fundamentals of large system design Understand the new software engineering implications of cloud administration Make systems that are resilient to failure and grow and scale dynamically Implement DevOps principles and cultural changes IaaS/PaaS/SaaS and virtual platform selection Operating and running systems using the latest DevOps/SRE strategies Upgrade production systems with zero down-time What and how to automate; how to decide what not to automate On-call best practices that improve uptime Why distributed systems require fundamentally different system administration techniques Identify and resolve resiliency problems before they surprise you Assessing and evaluating your team's operational effectiveness Manage the scientific process of continuous improvement A forty-page, pain-free assessment system you can start using today

With 28 new chapters, the third edition of *The Practice of System and Network Administration* innovates yet again! Revised with thousands of updates and clarifications based on reader feedback, this new edition also incorporates DevOps strategies even for non-DevOps environments. Whether you use Linux, Unix, or Windows, this new edition describes the essential practices previously handed down only from mentor to protégé. This wonderfully lucid, often funny cornucopia of information introduces beginners to advanced frameworks valuable for their entire career, yet is structured to help even experts through difficult projects. Other books tell you what commands to type. This book teaches you the cross-platform

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strategies that are timeless! DevOps techniques: Apply DevOps principles to enterprise IT infrastructure, even in environments without developers Game-changing strategies: New ways to deliver results faster with less stress Fleet management: A comprehensive guide to managing your fleet of desktops, laptops, servers and mobile devices Service management: How to design, launch, upgrade and migrate services Measurable improvement: Assess your operational effectiveness; a forty-page, pain-free assessment system you can start using today to raise the quality of all services Design guides: Best practices for networks, data centers, email, storage, monitoring, backups and more Management skills: Organization design, communication, negotiation, ethics, hiring and firing, and more Have you ever had any of these problems? Have you been surprised to discover your backup tapes are blank? Ever spent a year launching a new service only to be told the users hate it? Do you have more incoming support requests than you can handle? Do you spend more time fixing problems than building the next awesome thing? Have you suffered from a botched migration of thousands of users to a new service? Does your company rely on a computer that, if it died, can't be rebuilt? Is your network a fragile mess that breaks any time you try to improve it? Is there a periodic "hell month" that happens twice a year? Twelve times a year? Do you find out about problems when your users call you to complain? Does your corporate "Change Review Board" terrify you? Does each division of your company have their own broken way of doing things? Do you fear that automation will replace you, or break more than it fixes? Are you underpaid and overworked? No vague "management speak" or empty platitudes. This comprehensive guide provides real solutions that prevent these problems and more!

If you're involved in planning IT infrastructure as a network or system architect, system

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administrator, or developer, this book will help you adapt your skills to work with these highly scalable, highly redundant infrastructure services. While analysts hotly debate the advantages and risks of cloud computing, IT staff and programmers are left to determine whether and how to put their applications into these virtualized services. Cloud Application Architectures provides answers -- and critical guidance -- on issues of cost, availability, performance, scaling, privacy, and security. With Cloud Application Architectures, you will: Understand the differences between traditional deployment and cloud computing Determine whether moving existing applications to the cloud makes technical and business sense Analyze and compare the long-term costs of cloud services, traditional hosting, and owning dedicated servers Learn how to build a transactional web application for the cloud or migrate one to it Understand how the cloud helps you better prepare for disaster recovery Change your perspective on application scaling To provide realistic examples of the book's principles in action, the author delves into some of the choices and operations available on Amazon Web Services, and includes high-level summaries of several of the other services available on the market today. Cloud Application Architectures provides best practices that apply to every available cloud service. Learn how to make the transition to the cloud and prepare your web applications to succeed.

With their rapidly changing architecture and API-driven automation, cloud platforms come with unique security challenges and opportunities. This hands-on book guides you through security best practices for multivendor cloud environments, whether your company plans to move legacy on-premises projects to the cloud or build a new

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infrastructure from the ground up. Developers, IT architects, and security professionals will learn cloud-specific techniques for securing popular cloud platforms such as Amazon Web Services, Microsoft Azure, and IBM Cloud. Chris Dotson—an IBM senior technical staff member—shows you how to establish data asset management, identity and access management, vulnerability management, network security, and incident response in your cloud environment.

The Practice of Cloud System Administration, Volume 2, focuses on 'distributed' or 'cloud' computing and brings a DevOps/SRE sensibility to the practice of system administration. Unsatisfied with books that cover either design or operations in isolation, the authors created this authoritative reference centered on a comprehensive approach. Case studies and examples from Google, Etsy, Twitter, Facebook, Netflix, Amazon, and other industry giants are explained in practical ways that are useful to all enterprises. The new companion to the best-selling first volume, The Practice of System and Network Administration, Second Edition, this guide offers expert coverage of the following and many other crucial topics: Designing and building modern web and distributed systems; Fundamentals of large system design; Understand the new software engineering implications of cloud administration; Make systems that are resilient to failure and grow and scale dynamically; Implement DevOps principles and cultural changes; IaaS/PaaS/SaaS and virtual platform selection; Operating and running systems using the latest DevOps/SRE strategies; Upgrade production systems

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with zero down-time; What and how to automate, how to decide what not to automate; On-call best practices that improve uptime; Why distributed systems require fundamentally different system administration techniques; Identify and resolve resiliency problems before they surprise you; Assessing and evaluating your team's operational effectiveness; Manage the scientific process of continuous improvement; A forty-page, pain-free assessment system you can start using today"--Publisher's description.

An exploration of the benefits of cloud computing in geoscience research and applications as well as future research directions, *Spatial Cloud Computing: A Practical Approach* discusses the essential elements of cloud computing and their advantages for geoscience. Using practical examples, it details the geoscience requirements of cloud computing, covers general procedures and considerations when migrating geoscience applications onto cloud services, and demonstrates how to deploy different applications. The book discusses how to choose cloud services based on the general cloud computing measurement criteria and cloud computing cost models. The authors examine the readiness of cloud computing to support geoscience applications using open source cloud software solutions and commercial cloud services. They then review future research and developments in data, computation, concurrency, and spatiotemporal intensities of geosciences and how cloud service can be leveraged to meet the challenges. They also introduce research directions from the aspects of

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technology, vision, and social dimensions. Spatial Cloud Computing: A Practical Approach a common workflow for deploying geoscience applications and provides references to the concepts, technical details, and operational guidelines of cloud computing. These features and more give developers, geoscientists, and IT professionals the information required to make decisions about how to select and deploy cloud services.

Six years ago, Infrastructure as Code was a new concept. Today, as even banks and other conservative organizations plan moves to the cloud, development teams for companies worldwide are attempting to build large infrastructure codebases. With this practical book, Kief Morris of ThoughtWorks shows you how to effectively use principles, practices, and patterns pioneered by DevOps teams to manage cloud-age infrastructure. Ideal for system administrators, infrastructure engineers, software developers, team leads, and architects, this updated edition demonstrates how you can exploit cloud and automation technology to make changes easily, safely, quickly, and responsibly. You'll learn how to define everything as code and apply software design and engineering practices to build your system from small, loosely coupled pieces. This book covers: Foundations: Use Infrastructure as Code to drive continuous change and raise the bar of operational quality, using tools and technologies to build cloud-based platforms Working with infrastructure stacks: Learn how to define, provision, test, and continuously deliver changes to infrastructure resources Working with servers and other

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platforms: Use patterns to design provisioning and configuration of servers and clusters
Working with large systems and teams: Learn workflows, governance, and architectural patterns to create and manage infrastructure elements

Despite the buzz surrounding the cloud computing, only a small percentage of organizations have actually deployed this new style of IT—so far. If you're planning your long-term cloud strategy, this practical book provides insider knowledge and actionable real-world lessons regarding planning, design, operations, security, and application transformation. This book teaches business and technology managers how to transition their organization's traditional IT to cloud computing. Rather than yet another book trying to sell or convince readers on the benefits of clouds, this book provides guidance, lessons learned, and best practices on how to design, deploy, operate, and secure an enterprise cloud based on real-world experience. Author James Bond provides useful guidance and best-practice checklists based on his field experience with real customers and cloud providers. You'll view cloud services from the perspective of a consumer and as an owner/operator of an enterprise private or hybrid cloud, and learn valuable lessons from successful and less-than-successful organization use-case scenarios. This is the information every CIO needs in order to make the business and technical decisions to finally execute on their journey to cloud computing. Get updated trends and definitions in cloud computing, deployment models, and for building or buying cloud services Discover challenges in cloud operations and management not foreseen by

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early adopters Use real-world lessons to plan and build an enterprise private or hybrid cloud Learn how to assess, port, and migrate legacy applications to the cloud Identify security threats and vulnerabilities unique to the cloud Employ a cloud management system for your enterprise (private or multi-provider hybrid) cloud ecosystem Understand the challenges for becoming an IT service broker leveraging the power of the cloud

Virtualization, cloud, containers, server automation, and software-defined networking are meant to simplify IT operations. But many organizations adopting these technologies have found that it only leads to a faster-growing sprawl of unmanageable systems. This is where infrastructure as code can help. With this practical guide, author Kief Morris of ThoughtWorks shows you how to effectively use principles, practices, and patterns pioneered through the DevOps movement to manage cloud age infrastructure. Ideal for system administrators, infrastructure engineers, team leads, and architects, this book demonstrates various tools, techniques, and patterns you can use to implement infrastructure as code. In three parts, you'll learn about the platforms and tooling involved in creating and configuring infrastructure elements, patterns for using these tools, and practices for making infrastructure as code work in your environment. Examine the pitfalls that organizations fall into when adopting the new generation of infrastructure technologies Understand the capabilities and service models of dynamic infrastructure platforms Learn about tools that provide, provision, and configure core

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infrastructure resources Explore services and tools for managing a dynamic infrastructure Learn specific patterns and practices for provisioning servers, building server templates, and updating running servers

Cloud computing is the most significant technology transformation since the introduction of the Internet in the early 1990s. As more and more companies and educational institutions plan to adopt a cloud-based IT infrastructure, today's job market requires IT professionals who understand cloud computing and have hands-on experience developing cloud-based networks. *Cloud Computing Networking: Theory, Practice, and Development* covers the key networking and system administration concepts as well as the vital hands-on skills you need to master cloud technology. This book is designed to help you quickly get started in deploying cloud services for a real-world business. It provides detailed step-by-step instructions for creating a fully functioning cloud-based IT infrastructure using the Microsoft Azure cloud platform. In this environment, you can develop cloud services collaboratively or individually. The book enhances your hands-on skills through numerous lab activities. In these lab activities, you will learn to Implement the following services in a cloud environment: Active Directory, DHCP, DNS, and Certificate Services Configure Windows Server so it can route IP traffic Implement IP Security Policy and Windows Firewall with Advanced Security tools Create a point-to-site connection between Microsoft Azure and a local computer Create a site-to-site connection between Microsoft Azure and an on-premises

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network Develop a hybrid cloud that integrates Microsoft Azure with a private cloud created on a local network Cloud Computing Networking: Theory, Practice, and Development includes numerous examples, figures, and screen shots to help you understand the information. Each chapter concludes with a summary of the major topics and a set of review questions. With this book, you will soon have the critical knowledge and skills to develop and manage cloud-based networks.

Cloud computing has created a shift from the use of physical hardware and locally managed software-enabled platforms to that of virtualized cloud-hosted services. Cloud assembles large networks of virtual services, including hardware (CPU, storage, and network) and software resources (databases, message queuing systems, monitoring systems, and load-balancers). As Cloud continues to revolutionize applications in academia, industry, government, and many other fields, the transition to this efficient and flexible platform presents serious challenges at both theoretical and practical levels—ones that will often require new approaches and practices in all areas.

Comprehensive and timely, Cloud Computing: Methodology, Systems, and Applications summarizes progress in state-of-the-art research and offers step-by-step instruction on how to implement it. Summarizes Cloud Developments, Identifies Research Challenges, and Outlines Future Directions Ideal for a broad audience that includes researchers, engineers, IT professionals, and graduate students, this book is designed in three sections: Fundamentals of Cloud Computing: Concept, Methodology, and

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Overview Cloud Computing Functionalities and Provisioning Case Studies, Applications, and Future Directions It addresses the obvious technical aspects of using Cloud but goes beyond, exploring the cultural/social and regulatory/legal challenges that are quickly coming to the forefront of discussion. Properly applied as part of an overall IT strategy, Cloud can help small and medium business enterprises (SMEs) and governments in optimizing expenditure on application-hosting infrastructure. This material outlines a strategy for using Cloud to exploit opportunities in areas including, but not limited to, government, research, business, high-performance computing, web hosting, social networking, and multimedia. With contributions from a host of internationally recognized researchers, this reference delves into everything from necessary changes in users' initial mindset to actual physical requirements for the successful integration of Cloud into existing in-house infrastructure. Using case studies throughout to reinforce concepts, this book also addresses recent advances and future directions in methodologies, taxonomies, IaaS/SaaS, data management and processing, programming models, and applications.

If you create, manage, operate, or configure systems running in the cloud, you're a cloud engineer--even if you work as a system administrator, software developer, data scientist, or site reliability engineer. With this book, professionals from around the world provide valuable insight into today's cloud engineering role. These concise articles explore the entire cloud computing experience, including fundamentals, architecture, and migration. You'll delve into security and compliance, operations and reliability, and software development. And examine

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networking, organizational culture, and more. You're sure to find 1, 2, or 97 things that inspire you to dig deeper and expand your own career. "Three Keys to Making the Right Multicloud Decisions," Brendan O'Leary "Serverless Bad Practices," Manases Jesus Galindo Bello "Failing a Cloud Migration," Lee Atchison "Treat Your Cloud Environment as If It Were On Premises," Iyana Garry "What Is Toil, and Why Are SREs Obsessed with It?", Zachary Nickens "Lean QA: The QA Evolving in the DevOps World," Theresa Neate "How Economies of Scale Work in the Cloud," Jon Moore "The Cloud Is Not About the Cloud," Ken Corless "Data Gravity: The Importance of Data Management in the Cloud," Geoff Hughes "Even in the Cloud, the Network Is the Foundation," David Murray "Cloud Engineering Is About Culture, Not Containers," Holly Cummins

Learn to apply cloud-native patterns and practices to deliver responsive, resilient, elastic, and message-driven systems with confidence

Key Features

- Understand the architectural patterns involved in cloud-native architectures
- Minimize risk by evolving your monolithic applications into distributed cloud-native systems
- Discover best practices for applying cloud-native patterns to your enterprise-level cloud applications

Book Description

Build systems that leverage the benefits of the cloud and applications faster than ever before with cloud-native development. This book focuses on architectural patterns for building highly scalable cloud-native systems. You will learn how the combination of cloud, reactive principles, devops, and automation enable teams to continuously deliver innovation with confidence. Begin by learning the core concepts that make these systems unique. You will explore foundational patterns that turn your database inside out to achieve massive scalability with cloud-native databases. You will also learn how to continuously deliver production code with confidence by shifting deployment and

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testing all the way to the left and implementing continuous observability in production. There's more—you will also learn how to strangle your monolith and design an evolving cloud-native system. By the end of the book, you will have the ability to create modern cloud-native systems. What you will learn

- Enable massive scaling by turning your database inside out
- Unleash flexibility via event streaming
- Leverage polyglot persistence and cloud-native databases
- Embrace modern continuous delivery and testing techniques
- Minimize risk by evolving your monoliths to cloud-native
- Apply cloud-native patterns and solve major architectural problems in cloud environment

Who this book is for This book is for developers who would like to progress into building cloud-native systems and are keen to learn the patterns involved. Basic knowledge of programming and cloud computing is required.

In the past few years, going cloud native has been a big advantage for many companies. But it's a tough technique to get right, especially for enterprises with critical legacy systems. This practical hands-on guide examines effective architecture, design, and cultural patterns to help you transform your organization into a cloud native enterprise—whether you're moving from older architectures or creating new systems from scratch. By following Wealth Grid, a fictional company, you'll understand the challenges, dilemmas, and considerations that accompany a move to the cloud. Technical managers and architects will learn best practices for taking on a successful company-wide transformation. Cloud migration consultants Pini Reznik, Jamie Dobson, and Michelle Gienow draw patterns from the growing community of expert practitioners and enterprises that have successfully built cloud native systems. You'll learn what works and what doesn't when adopting cloud native—including how this transition affects not just your technology but also your organizational structure and processes. You'll learn:

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What cloud native means and why enterprises are so interested in it
Common barriers and pitfalls that have affected other companies (and how to avoid them)
Context-specific patterns for a successful cloud native transformation
How to implement a safe, evolutionary cloud native approach
How companies addressed root causes and misunderstandings that hindered their progress
Case studies from real-world companies that have succeeded with cloud native transformations

Explore site reliability engineering practices and learn key Google Cloud Platform (GCP) services such as Cloud Storage, Cloud Build, Container Registry, GKE, and Cloud Operations to implement DevOps
Key Features
Learn GCP services for version control, building code, creating artifacts, and deploying secured containerized applications
Explore Cloud Operations features such as Metrics Explorer, Logs Explorer, and debug logpoints
Prepare for the certification exam using practice questions and mock tests
Book Description
DevOps is a set of practices that help remove barriers between developers and system administrators, and is implemented by Google through site reliability engineering (SRE). With the help of this book, you'll explore the evolution of DevOps and SRE, before delving into SRE technical practices such as SLA, SLO, SLI, and error budgets that are critical to building reliable software faster and balance new feature deployment with system reliability. You'll then explore SRE cultural practices such as incident management and being on-call, and learn the building blocks to form SRE teams. The second part of the book focuses on Google Cloud services to implement DevOps via continuous integration and continuous delivery (CI/CD). You'll learn how to add source code via Cloud Source Repositories, build code to create deployment artifacts via Cloud Build, and push it to Container Registry. Moving on, you'll understand the need for

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container orchestration via Kubernetes, comprehend Kubernetes essentials, apply via Google Kubernetes Engine (GKE), and secure the GKE cluster. Finally, you'll explore Cloud Operations to monitor, alert, debug, trace, and profile deployed applications. By the end of this SRE book, you'll be well-versed with the key concepts necessary for gaining Professional Cloud DevOps Engineer certification with the help of mock tests. What you will learn

- Categorize user journeys and explore different ways to measure SLIs
- Explore the four golden signals for monitoring a user-facing system
- Understand psychological safety along with other SRE cultural practices
- Create containers with build triggers and manual invocations
- Delve into Kubernetes workloads and potential deployment strategies
- Secure GKE clusters via private clusters, Binary Authorization, and shielded GKE nodes
- Get to grips with monitoring, Metrics Explorer, uptime checks, and alerting
- Discover how logs are ingested via the Cloud Logging API

Who this book is for This book is for cloud system administrators and network engineers interested in resolving cloud-based operational issues. IT professionals looking to enhance their careers in administering Google Cloud services and users who want to learn about applying SRE principles and implementing DevOps in GCP will also benefit from this book. Basic knowledge of cloud computing, GCP services, and CI/CD and hands-on experience with Unix/Linux infrastructure is recommended. You'll also find this book useful if you're interested in achieving Professional Cloud DevOps Engineer certification.

This book provides a technical description of cloud computing technologies, covering cloud infrastructure and platform services. It then addresses the basics of operating a Cloud computing data center, the services offered from Cloud providers, the carrier role in connecting users to data centers, and the process of interconnecting Cloud data centers to form a flexible

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processing unit. It also describes how cloud computing has made an impact in various industries and provides emerging technologies that are critical within each industry. Lastly, this book will address security requirements and provide the best practices in securing data. Learn to analyze and measure risk by exploring the nature of trust and its application to cybersecurity Trust in Computer Systems and the Cloud delivers an insightful and practical new take on what it means to trust in the context of computer and network security and the impact on the emerging field of Confidential Computing. Author Mike Bursell's experience, ranging from Chief Security Architect at Red Hat to CEO at a Confidential Computing start-up grounds the reader in fundamental concepts of trust and related ideas before discussing the more sophisticated applications of these concepts to various areas in computing. The book demonstrates in the importance of understanding and quantifying risk and draws on the social and computer sciences to explain hardware and software security, complex systems, and open source communities. It takes a detailed look at the impact of Confidential Computing on security, trust and risk and also describes the emerging concept of trust domains, which provide an alternative to standard layered security. Foundational definitions of trust from sociology and other social sciences, how they evolved, and what modern concepts of trust mean to computer professionals A comprehensive examination of the importance of systems, from open-source communities to HSMs, TPMs, and Confidential Computing with TEEs. A thorough exploration of trust domains, including explorations of communities of practice, the centralization of control and policies, and monitoring Perfect for security architects at the CISSP level or higher, Trust in Computer Systems and the Cloud is also an indispensable addition to the libraries of system architects, security system engineers, and master's students

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in software architecture and security.

In the era of the Internet of Things and with the explosive worldwide growth of electronic data volume, and associated need of processing, analysis, and storage of such a humongous amount of data, it has now become mandatory to exploit the power of massively parallel architecture for fast computation. Cloud computing provides a cheap source of such a computing framework for a large volume of data for real-time applications. It is, therefore, not surprising to see that cloud computing has become a buzzword in the computing fraternity over the last decade. Applications of Cloud Computing: Approaches and Practices lays a good foundation for the core concepts and principles of cloud computing applications, walking the reader through the fundamental ideas with expert ease. The book progresses on the topics in a step-by-step manner. It reinforces theory with a full-fledged pedagogy designed to enhance students' understanding and offer them a practical insight into the applications of it. It is a valuable source of knowledge for researchers, engineers, practitioners, and graduate and doctoral students working in the field of cloud computing. It will also be useful for faculty members of graduate schools and universities.

Cloud Computing: Theory and Practice provides students and IT professionals with an in-depth analysis of the cloud from the ground up. Beginning with a discussion of parallel computing and architectures and distributed systems, the book turns to contemporary cloud infrastructures, how they are being deployed at leading companies such as Amazon, Google and Apple, and how they can be applied in fields such as healthcare, banking and science. The volume also examines how to successfully deploy a cloud application across the enterprise using virtualization, resource management and the right amount of networking

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support, including content delivery networks and storage area networks. Developers will find a complete introduction to application development provided on a variety of platforms. Learn about recent trends in cloud computing in critical areas such as: resource management, security, energy consumption, ethics, and complex systems Get a detailed hands-on set of practical recipes that help simplify the deployment of a cloud based system for practical use of computing clouds along with an in-depth discussion of several projects Understand the evolution of cloud computing and why the cloud computing paradigm has a better chance to succeed than previous efforts in large-scale distributed computing

This latest textbook from bestselling author, Douglas E. Comer, is a class-tested book providing a comprehensive introduction to cloud computing. Focusing on concepts and principles, rather than commercial offerings by cloud providers and vendors, *The Cloud Computing Book: The Future of Computing Explained* gives readers a complete picture of the advantages and growth of cloud computing, cloud infrastructure, virtualization, automation and orchestration, and cloud-native software design. The book explains real and virtual data center facilities, including computation (e.g., servers, hypervisors, Virtual Machines, and containers), networks (e.g., leaf-spine architecture, VLANs, and VxLAN), and storage mechanisms (e.g., SAN, NAS, and object storage). Chapters on automation and orchestration cover the conceptual organization of systems that automate software deployment and scaling. Chapters on cloud-native software cover parallelism, microservices, MapReduce, controller-based designs, and serverless computing. Although it focuses on concepts and principles, the book uses popular technologies in examples, including Docker containers and Kubernetes. Final chapters explain security in a cloud environment and the use of models to help control the

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complexity involved in designing software for the cloud. The text is suitable for a one-semester course for software engineers who want to understand cloud, and for IT managers moving an organization's computing to the cloud.

The Practice of Cloud System Administration Designing and Operating Large Distributed Systems Pearson Education

As part of the Syngress Basics series, The Basics of Cloud Computing provides readers with an overview of the cloud and how to implement cloud computing in their organizations. Cloud computing continues to grow in popularity, and while many people hear the term and use it in conversation, many are confused by it or unaware of what it really means. This book helps readers understand what the cloud is and how to work with it, even if it isn't a part of their day-to-day responsibility. Authors Derrick Rountree and Ileana Castrillo explains the concepts of cloud computing in practical terms, helping readers understand how to leverage cloud services and provide value to their businesses through moving information to the cloud. The book will be presented as an introduction to the cloud, and reference will be made in the introduction to other Syngress cloud titles for readers who want to delve more deeply into the topic. This book gives readers a conceptual understanding and a framework for moving forward with cloud computing, as opposed to competing and related titles, which seek to be comprehensive guides to the cloud. Provides a sound understanding of the cloud and how it works Describes both cloud deployment models and cloud services models, so you can make the best decisions for deployment Presents tips for selecting the best cloud services providers

Kubernetes is the operating system of the cloud native world, providing a reliable and scalable platform for running containerized workloads. In this friendly, pragmatic book, cloud experts

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John Arundel and Justin Domingus show you what Kubernetes can do—and what you can do with it. You'll learn all about the Kubernetes ecosystem, and use battle-tested solutions to everyday problems. You'll build, step by step, an example cloud native application and its supporting infrastructure, along with a development environment and continuous deployment pipeline that you can use for your own applications. Understand containers and Kubernetes from first principles; no experience necessary Run your own clusters or choose a managed Kubernetes service from Amazon, Google, and others Use Kubernetes to manage resource usage and the container lifecycle Optimize clusters for cost, performance, resilience, capacity, and scalability Learn the best tools for developing, testing, and deploying your applications Apply the latest industry practices for security, observability, and monitoring Adopt DevOps principles to help make your development teams lean, fast, and effective

With its cost efficiency, enabling of collaboration and sharing of resources, and its ability to improve access, cloud computing is likely to play a big role in the classrooms of tomorrow. Cloud Computing for Teaching and Learning: Strategies for Design and Implementation provides the latest information about cloud development and cloud applications in teaching and learning. The book also include empirical research findings in these areas for professionals and researchers working in the field of e-learning who want to implement teaching and learning with cloud computing, as well as provide insights and support to executives concerned with cloud development and cloud applications in e-learning communities and environments.

Take your AWS skills to the next level by learning infrastructure automation techniques using CloudFormation, Terraform, and Boto3 Key Features Explore AWS automation using CloudFormation, Terraform, and Boto3 Leverage AWS to make your infrastructure flexible and

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highly available Discover various AWS features for building a secure and reliable environment to host your application Book Description Amazon Web Services (AWS) is one of the most popular and efficient cloud platforms for administering and deploying your applications to make them resilient and robust. AWS for System Administrators will help you to learn several advanced cloud administration concepts for deploying, managing, and operating highly available systems on AWS. Starting with the fundamentals of identity and access management (IAM) for securing your environment, this book will gradually take you through AWS networking and monitoring tools. As you make your way through the chapters, you'll get to grips with VPC, EC2, load balancer, Auto Scaling, RDS database, and data management. The book will also show you how to initiate AWS automated backups and store and keep track of log files. Later, you'll work with AWS APIs and understand how to use them along with CloudFormation, Python Boto3 Script, and Terraform to automate infrastructure. By the end of this AWS book, you'll be ready to build your two-tier startup with all the necessary infrastructure, monitoring, and logging components in place. What you will learn Adopt a security-first approach by giving users minimum access using IAM policies Build your first Amazon Elastic Compute Cloud (EC2) instance using the AWS CLI, Boto3, and Terraform Set up your datacenter in AWS Cloud using VPC Scale your application based on demand using Auto Scaling Monitor services using CloudWatch and SNS Work with centralized logs for analysis (CloudWatch Logs) Back up your data using Amazon Simple Storage Service (Amazon S3), Data Lifecycle Manager, and AWS Backup Who this book is for This Amazon Web Services book is for system administrators and solution architects who want to build highly available and flexible AWS Cloud platforms for their applications. Software engineers and programmers looking to

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deploy their applications to AWS Cloud will also find this book useful. Basic knowledge of Linux and AWS is necessary to get started.

From small start-ups to major corporations, companies of all sizes have embraced cloud computing for the scalability, reliability, and cost benefits it can provide. It has even been said that cloud computing may have a greater effect on our lives than the PC and dot-com revolutions combined.

Filled with comparative charts and decision trees, Implement Learn how to build your successful practice in the cloud in just 10 steps. In this popular, how-to guide you'll get practical, comprehensive information with step-by-step instructions, covering areas such as: Infrastructure, scanning solutions, document management, client portals, workflow management, cloud-based client accounting systems, security, disaster recovery.

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Developers often struggle when first encountering the cloud. Learning about distributed systems, becoming familiar with technologies such as containers and functions, and knowing how to put everything together can be daunting. With this practical guide, you'll get up to speed on patterns for building cloud native applications and best practices for common tasks such as messaging, eventing, and DevOps. Authors Boris Scholl, Trent Swanson, and Peter Jausovec describe the architectural building blocks for a modern cloud native application. You'll learn how to use microservices, containers, serverless computing, storage types, portability, and functions. You'll also explore the fundamentals of cloud native

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applications, including how to design, develop, and operate them. Explore the technologies you need to design a cloud native application Distinguish between containers and functions, and learn when to use them Architect applications for data-related requirements Learn DevOps fundamentals and practices for developing, testing, and operating your applications Use tips, techniques, and best practices for building and managing cloud native applications Understand the costs and trade-offs necessary to make an application portable

Systems Simulation and Modelling for Cloud Computing and Big Data Applications

provides readers with the most current approaches to solving problems through the use of models and simulations, presenting SSM based approaches to performance testing and benchmarking that offer significant advantages. For example, multiple big data and cloud application developers and researchers can perform tests in a controllable and repeatable manner. Inspired by the need to analyze the performance of different big data processing and cloud frameworks, researchers have introduced several benchmarks, including BigDataBench, BigBench, HiBench, PigMix, CloudSuite and GridMix, which are all covered in this book. Despite the substantial progress, the research community still needs a holistic, comprehensive big data SSM to use in almost every scientific and engineering discipline involving multidisciplinary research.

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SSM develops frameworks that are applicable across disciplines to develop benchmarking tools that are useful in solutions development. Examines the methodology and requirements of benchmarking big data and cloud computing tools, advances in big data frameworks and benchmarks for large-scale data analytics, and frameworks for benchmarking and predictive analytics in big data deployment Discusses applications using big data benchmarks, such as BigDataBench, BigBench, HiBench, MapReduce, HPCC, ECL, HOBBIT, GridMix and PigMix, and applications using big data frameworks, such as Hadoop, Spark, Samza, Flink and SQL frameworks Covers development of big data benchmarks to evaluate workloads in state-of-the-practice heterogeneous hardware platforms, advances in modeling and simulation tools for performance evaluation, security problems and scalable cloud computing environments

Cloud computing is a model where computing resources (processors, storage, software) are offered as a utility from an indistinct location and boundaries to the user. Adoption of Cloud computing in recent years has gained momentum within various avenues round the globe due to its characteristics like elasticity, virtualization and pay-as-you-go pricing. In tune with the trend various companies have evolved which are offering web applications. These companies provide the system required to host the application to users on lease which saves them from

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purchasing. The book combines both theoretical and practical perspectives of cloud computing with a slant towards library and information centres. The book describes in detail about various companies which are providing cloud computing solutions and infrastructure for library and information centres. Initiatives of OCLC and best practices adopted in other libraries around the world has been discussed at length. Many avenues of the implementation of cloud computing has been identified in the present study. Various initiatives of the library professionals to move their internet sites, their integrated library system for cataloguing and acquisition, Cloud based library apps, Cloud based Stack Map and their repository systems and inter library loan systems to the cloud has been mentioned. The book further proposes a model which may serve as a blueprint for implementation of cloud computing technologies in libraries. With the timely publication of book, library and information service practitioners after going through the book can outsource the task of maintaining the computer infrastructure and focus on their mission to serve people with right information at right point of time.

Cloud computing presents a promising approach for implementing scalable information and communications technology systems for private and public, individual, community, and business use. Achieving Federated and Self-

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Manageable Cloud Infrastructures: Theory and Practice overviews current developments in cloud computing concepts, architectures, infrastructures and methods, focusing on the needs of small to medium enterprises. The topic of cloud computing is addressed on two levels: the fundamentals of cloud computing and its impact on the IT world; and an analysis of the main issues regarding the cloud federation, autonomic resource management, and efficient market mechanisms, while supplying an overview of the existing solutions able to solve them. This publication is aimed at both enterprise business managers and research and academic audiences alike.

Cloud reliability engineering is a leading issue of cloud services. Cloud service providers guarantee computation, storage and applications through service-level agreements (SLAs) for promised levels of performance and uptime. Cloud Reliability Engineering: Technologies and Tools presents case studies examining cloud services, their challenges, and the reliability mechanisms used by cloud service providers. These case studies provide readers with techniques to harness cloud reliability and availability requirements in their own endeavors. Both conceptual and applied, the book explains reliability theory and the best practices used by cloud service companies to provide high availability. It also examines load balancing, and cloud security. Written by researchers and

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practitioners, the book's chapters are a comprehensive study of cloud reliability and availability issues and solutions. Various reliability class distributions and their effects on cloud reliability are discussed. An important aspect of reliability block diagrams is used to categorize poor reliability of cloud infrastructures, where enhancement can be made to lower the failure rate of the system. This technique can be used in design and functional stages to determine poor reliability of a system and provide target improvements. Load balancing for reliability is examined as a migrating process or performed by using virtual machines. The approach employed to identify the lightly loaded destination node to which the processes/virtual machines migrate can be optimized by employing a genetic algorithm. To analyze security risk and reliability, a novel technique for minimizing the number of keys and the security system is presented. The book also provides an overview of testing methods for the cloud, and a case study discusses testing reliability, installability, and security. A comprehensive volume, *Cloud Reliability Engineering: Technologies and Tools* combines research, theory, and best practices used to engineer reliable cloud availability and performance.

The overwhelming majority of a software system's lifespan is spent in use, not in design or implementation. So, why does conventional wisdom insist that software

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engineers focus primarily on the design and development of large-scale computing systems? In this collection of essays and articles, key members of Google's Site Reliability Team explain how and why their commitment to the entire lifecycle has enabled the company to successfully build, deploy, monitor, and maintain some of the largest software systems in the world. You'll learn the principles and practices that enable Google engineers to make systems more scalable, reliable, and efficient—lessons directly applicable to your organization. This book is divided into four sections: Introduction—Learn what site reliability engineering is and why it differs from conventional IT industry practices Principles—Examine the patterns, behaviors, and areas of concern that influence the work of a site reliability engineer (SRE) Practices—Understand the theory and practice of an SRE's day-to-day work: building and operating large distributed computing systems Management—Explore Google's best practices for training, communication, and meetings that your organization can use

To help readers understand virtualization and cloud computing, this book is designed to cover the theories and concepts enough to understand the cutting-edge technology. Meanwhile, in this book, the reader can gain hands-on skills on VMware Cloud Suite to create a private cloud. With the academic support from VMware, readers can use the VMware supported software to create various

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virtualized IT infrastructures sophisticated enough for various sized enterprises. Then, the virtualized IT infrastructure can be made available to an enterprise through the private cloud services.

Explores cloud computing, breaking down the concepts, models, mechanisms, and architectures of this technology while allowing for the financial assessment of resources and how they compare to traditional storage systems.

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