

Architecting Distributed Cloud Applications

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 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 Apply cloud native patterns and practices to deliver responsive, resilient, elastic, and message-driven systems with confidence Key Features Discover best practices for applying cloud native patterns to your cloud applications Explore ways to effectively plan resources and technology stacks for high security and fault tolerance Gain insight into core architectural principles using real-world examples Book Description Cloud computing has proven to be the most revolutionary IT development since virtualization. Cloud native architectures give you the benefit of more flexibility over legacy systems. This Learning Path teaches you everything you need to know for designing industry-grade cloud applications and efficiently migrating your business to the cloud. It begins by exploring the basic patterns that turn your database inside out to achieve massive scalability. You'll learn how to develop cloud native architectures using microservices and serverless computing as your design principles. Then, you'll explore ways to continuously deliver production code by implementing continuous observability in production. In the concluding chapters, you'll learn about various public cloud architectures ranging from AWS and Azure to the Google Cloud Platform, and understand the future trends and expectations of cloud providers. By the end of this Learning Path, you'll have learned the techniques to adopt cloud native architectures that meet your business requirements. This Learning Path includes content from the following Packt products: Cloud Native Development Patterns and Best Practices by John Gilbert Cloud Native Architectures by Erik Farr et al. What you will learn Understand the difference between cloud native and traditional architecture Automate security controls and configuration management Minimize risk by evolving your monolithic systems into cloud native applications Explore the aspects of migration, when

and why to use it Apply modern delivery and testing methods to continuously deliver production code Enable massive scaling by turning your database inside out Who this book is for This Learning Path is designed for developers who want to progress into building cloud native systems and are keen to learn the patterns involved. Software architects, who are keen on designing scalable and highly available cloud native applications, will also find this Learning Path very useful. To easily grasp these concepts, you will need basic knowledge of programming and cloud computing.

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 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.

This book constitutes the proceedings of the 6th International Conference on Cloud Computing, CloudComp 2015, held in Daejeon, South Korea, in October 2015. The 36 revised full papers were carefully reviewed and selected from 89 submissions and cover topics such as virtualization and management on cloud; resource management, models and performance; mobile cloud and media services; pervasive cloud applications, services and testbeds; cloud-enabling techniques and devices.

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

Validate your AWS skills. This is your opportunity to take the next step in your career by expanding and validating your skills on the AWS cloud. AWS has been the frontrunner in cloud computing products and services, and the AWS Certified Solutions Architect Official Study Guide for the Associate exam will get you fully prepared through expert content, and real-world knowledge, key exam essentials, chapter review questions, access to Sybex's interactive online learning environment, and much more. This official study guide, written by AWS experts, covers exam concepts, and provides key review on exam topics, including: Mapping Multi-Tier Architectures to AWS Services, such as web/app servers, firewalls, caches and load balancers Understanding managed RDBMS through AWS RDS (MySQL, Oracle, SQL Server, Postgres, Aurora) Understanding Loose Coupling and Stateless Systems Comparing Different Consistency Models in AWS Services Understanding how AWS CloudFront can make your application more cost efficient, faster and secure Implementing Route tables, Access Control Lists, Firewalls, NAT, and DNS Applying AWS Security Features along with traditional Information and Application Security Using Compute, Networking, Storage, and Database AWS services Architecting Large Scale Distributed Systems Understanding of Elasticity and Scalability Concepts Understanding of Network Technologies Relating to AWS Deploying and Managing Services with tools such as CloudFormation, OpsWorks and Elastic Beanstalk. Learn from the AWS subject-matter experts, review with proven study tools, and apply real-world scenarios. If you are looking to take the AWS Certified Solutions Architect Associate exam, this guide is what you need for comprehensive content and robust study tools that will help you gain the edge on exam day and throughout your career.

A holistic approach to service reliability and availability of cloud computing Reliability and Availability of Cloud Computing provides IS/IT system and solution architects, developers, and engineers with the knowledge needed to assess the impact of virtualization and cloud computing on service reliability and availability. It reveals how to select the most appropriate design for reliability diligence to

assure that user expectations are met. Organized in three parts (basics, risk analysis, and recommendations), this resource is accessible to readers of diverse backgrounds and experience levels. Numerous examples and more than 100 figures throughout the book help readers visualize problems to better understand the topic—and the authors present risks and options in bulleted lists that can be applied directly to specific applications/problems. Special features of this book include: Rigorous analysis of the reliability and availability risks that are inherent in cloud computing Simple formulas that explain the quantitative aspects of reliability and availability Enlightening discussions of the ways in which virtualized applications and cloud deployments differ from traditional system implementations and deployments Specific recommendations for developing reliable virtualized applications and cloud-based solutions Reliability and Availability of Cloud Computing is the guide for IS/IT staff in business, government, academia, and non-governmental organizations who are moving their applications to the cloud. It is also an important reference for professionals in technical sales, product management, and quality management, as well as software and quality engineers looking to broaden their expertise.

In the era of the Internet of Things and Big Data, Cloud Computing has recently emerged as one of the latest buzzwords in the computing industry. It is the latest evolution of computing, where IT resources are offered as services. Cloud computing provides on-demand, scalable, device-independent, and reliable services to its users. The exponential growth of digital data bundled with the needs of analysis, processing and storage, and cloud computing has paved the way for a cheap, secure, and omnipresent computing framework allowing for the delivery of enormous computing and storage capacity to a diverse community of end-recipients. Clouds are distributed technology platforms that leverage sophisticated technology innovations to provide highly scalable and resilient environments that can be remotely utilized by organizations in a multitude of powerful ways. The term cloud is often used as a metaphor for the Internet and can be defined as a new type of utility computing that basically uses servers that have been made available to third parties via the Internet.

Design and Deploy your Cloud-Native Solutions on Azure. About This Video A unique all-in-one guide to develop powerful and scalable solutions on Azure using Platform-as-a-Service (PaaS) services Learn to design and develop an application as a Cloud-Native service, and deploy using PaaS deployment model that adheres to Azure standards and cloud practices Build a globally distributed application using the power of Microsoft Azure's PaaS offering In Detail Microsoft Azure provides support for different architectures and solutions that teams can employ in their cloud solutions and cloud-hosted applications. This course will show you how to use Azure's PaaS offering to build global, performant, and secure applications. You'll gain a better understanding of PaaS development on Azure, and how to architect your applications and services in a Cloud-Native design. You will learn how to explore Azure marketplace to find the best suitable service for your application requirements, and then integrate your application to work frictionless with Azure solutions. By the end of this course, you will be capable of

architecting your applications on Microsoft Azure using PaaS solutions. This course will help you learn the ins and outs of the architectural development of solutions for Microsoft Azure. Downloading the example code for this course: You can download the example code files for this course on GitHub at the following link:

<https://github.com/PacktPublishing/Architecting-Azure-Solutions-for-PaaS> . If you require support please email: customercare@packt.com.

Distributed systems intertwine with our everyday lives. The benefits and current shortcomings of the underpinning technologies are experienced by a wide range of people and their smart devices. With the rise of large-scale IoT and similar distributed systems, cloud bursting technologies, and partial outsourcing solutions, private entities are encouraged to increase their efficiency and offer unparalleled availability and reliability to their users. The Research Anthology on Architectures, Frameworks, and Integration Strategies for Distributed and Cloud Computing is a vital reference source that provides valuable insight into current and emergent research occurring within the field of distributed computing. It also presents architectures and service frameworks to achieve highly integrated distributed systems and solutions to integration and efficient management challenges faced by current and future distributed systems. Highlighting a range of topics such as data sharing, wireless sensor networks, and scalability, this multi-volume book is ideally designed for system administrators, integrators, designers, developers, researchers, academicians, and students.

Cloud Computing Principles and Paradigms John Wiley & Sons

This volume contains the proceedings of CloudCom 2009, the First International Conference on Cloud Computing. The conference was held in Beijing, China, during December 1–4, 2009, and was the first in a series initiated by the Cloud Computing Association (www.cloudcom.org). The Cloud Computing Association was founded in 2009 by Chunming Rong, Martin Gilje Jaatun, and Frode Eika Sandnes. This first conference was organized by the Beijing Jitong University, Chinese Institute of Electronics, and Wuhan University, and co-organized by Huazhong University of Science and Technology, South China Normal University, and Sun Yat-sen University. Ever since the inception of the Internet, a “Cloud” has been used as a metaphor for a network-accessible infrastructure (e.g., data storage, computing hardware, or entire networks) which is hidden from users. To some, the concept of cloud computing may seem like a throwback to the days of big mainframe computers, but we believe that cloud computing makes data truly mobile, allowing a user to access services anywhere, anytime, with any Internet browser. In cloud computing, IT-related capabilities are provided as services, accessible without requiring control of, or even knowledge of, the underlying technology. Cloud computing provides dynamic scalability of services and computing power, and although many mature technologies are used as components in cloud computing, there are still many unresolved and open problems.

Mastering Cloud Computing is designed for undergraduate students learning to develop cloud computing applications. Tomorrow's applications won't live on a single computer but will be deployed from and reside on a virtual server, accessible anywhere, any time. Tomorrow's application developers need to understand the requirements of building apps for these virtual systems, including concurrent programming, high-performance computing, and data-intensive systems. The book introduces the principles of distributed and parallel computing underlying cloud architectures and specifically

focuses on virtualization, thread programming, task programming, and map-reduce programming. There are examples demonstrating all of these and more, with exercises and labs throughout. Explains how to make design choices and tradeoffs to consider when building applications to run in a virtual cloud environment Real-world case studies include scientific, business, and energy-efficiency considerations

Cloud computing is rapidly expanding in its applications and capabilities through various parts of society. Utilizing different types of virtualization technologies can push this branch of computing to even greater heights. Design and Use of Virtualization Technology in Cloud Computing is a crucial resource that provides in-depth discussions on the background of virtualization, and the ways it can help shape the future of cloud computing technologies. Highlighting relevant topics including grid computing, mobile computing, open source virtualization, and virtualization in education, this scholarly reference source is ideal for computer engineers, academicians, students, and researchers that are interested in learning more about how to infuse current cloud computing technologies with virtualization advancements.

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 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.

This book constitutes revised selected papers from the workshops held at 24th International Conference on Parallel and Distributed Computing, Euro-Par 2018, which took place in Turin, Italy, in August 2018. The 64 full papers presented in this volume were carefully reviewed and selected from 109 submissions. Euro-Par is an annual, international conference in Europe, covering all aspects of parallel and distributed processing. These range from theory to practice, from small to the largest parallel and distributed systems and infrastructures, from fundamental computational problems to full-edged applications, from architecture, compiler, language and interface design and implementation to tools, support infrastructures, and application performance aspects. Achieve your infrastructure goals and optimize business processes by designing

robust, highly available, and dynamic solutions

Key Features: Gain hands-on experience in designing and managing high-performance cloud solutions
Leverage Google Cloud Platform to optimize technical and business processes using cutting-edge technologies and services
Use Google Cloud Big Data, AI, and ML services to design scalable and intelligent data solutions

Book Description: Google has been one of the top players in the public cloud domain thanks to its agility and performance capabilities. This book will help you design, develop, and manage robust, secure, and dynamic solutions to successfully meet your business needs. You'll learn how to plan and design network, compute, storage, and big data systems that incorporate security and compliance from the ground up. The chapters will cover simple to complex use cases for devising solutions to business problems, before focusing on how to leverage Google Cloud's Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) capabilities for designing modern no-operations platforms. Throughout this book, you'll discover how to design for scalability, resiliency, and high availability. Later, you'll find out how to use Google Cloud to design modern applications using microservices architecture, automation, and Infrastructure-as-Code (IaC) practices. The concluding chapters then demonstrate how to apply machine learning and artificial intelligence (AI) to derive insights from your data. Finally, you will discover best practices for operating and monitoring your cloud solutions, as well as performing troubleshooting and quality assurance. By the end of this Google Cloud book, you'll be able to design robust enterprise-grade solutions using Google Cloud Platform.

What You Will Learn: Get to grips with compute, storage, networking, data analytics, and pricing
Discover delivery models such as IaaS, PaaS, and SaaS
Explore the underlying technologies and economics of cloud computing
Design for scalability, business continuity, observability, and resiliency
Secure Google Cloud solutions and ensure compliance
Understand operational best practices and learn how to architect a monitoring solution
Gain insights into modern application design with Google Cloud
Leverage big data, machine learning, and AI with Google Cloud

Who this book is for: This book is for cloud architects who are responsible for designing and managing cloud solutions with GCP. You'll also find the book useful if you're a system engineer or enterprise architect looking to learn how to design solutions with Google Cloud. Moreover, cloud architects who already have experience with other cloud providers and are now beginning to work with Google Cloud will benefit from the book. Although an intermediate-level understanding of cloud computing and distributed apps is required, prior experience of working in the public and hybrid cloud domain is not mandatory.

With the immense cost savings and scalability the cloud provides, the rationale for building cloud native applications is no longer in question. The real issue is how. With this practical guide, developers will learn about the most commonly used design patterns for building cloud native applications using APIs, data, events, and streams in both greenfield and brownfield development. You'll learn

how to incrementally design, develop, and deploy large and effective cloud native applications that you can manage and maintain at scale with minimal cost, time, and effort. Authors Kasun Indrasiri and Sriskandarajah Suhothayan highlight use cases that effectively demonstrate the challenges you might encounter at each step. Learn the fundamentals of cloud native applications Explore key cloud native communication, connectivity, and composition patterns Learn decentralized data management techniques Use event-driven architecture to build distributed and scalable cloud native applications Explore the most commonly used patterns for API management and consumption Examine some of the tools and technologies you'll need for building cloud native systems This book reviews the challenging issues that present barriers to greater implementation of the cloud computing paradigm, together with the latest research into developing potential solutions. Topics and features: presents a focus on the most important issues and limitations of cloud computing, covering cloud security and architecture, QoS and SLAs; discusses a methodology for cloud security management, and proposes a framework for secure data storage and identity management in the cloud; introduces a simulation tool for energy-aware cloud environments, and an efficient congestion control system for data center networks; examines the issues of energy-aware VM consolidation in the IaaS provision, and software-defined networking for cloud related applications; reviews current trends and suggests future developments in virtualization, cloud security, QoS data warehouses, cloud federation approaches, and DBaaS provision; predicts how the next generation of utility computing infrastructures will be designed.

This book discusses harnessing the real power of cloud computing in optimization problems, presenting state-of-the-art computing paradigms, advances in applications, and challenges concerning both the theories and applications of cloud computing in optimization with a focus on diverse fields like the Internet of Things, fog-assisted cloud computing, and big data. In real life, many problems – ranging from social science to engineering sciences – can be identified as complex optimization problems. Very often these are intractable, and as a result researchers from industry as well as the academic community are concentrating their efforts on developing methods of addressing them. Further, the cloud computing paradigm plays a vital role in many areas of interest, like resource allocation, scheduling, energy management, virtualization, and security, and these areas are intertwined with many optimization problems. Using illustrations and figures, this book offers students and researchers a clear overview of the concepts and practices of cloud computing and its use in numerous complex optimization problems.

This is a reference book for Architects. This book can be helpful for those developers who want to increase breadth of knowledge about tools and technology. If you are planning for career advancement and you are interviewing for cloud architect, this book can also be used for interview preparation purpose.

You can go through this book before your interview every time, so that you will remember all the concepts before interview. As the technology is evolving very fast, new tools and technologies are coming every day. This book covers fundamental of architecting or re-architecting of the application. This book also makes you aware and provides details about tools and technology available in cloud. This book does not over explain any concepts, keeping in mind that you can complete your reading in less time. With this book, you will get lot of information in less reading time.

This comprehensive guide helps developers and architects understand current cloud-native technologies, with recommendations that explain when you need to use each one. Authors Boris Scholl, Trent Swanson, and Peter Jausovec describe the patterns you need for building cloud-native applications, and provide best practices for the most common tasks such as messaging, eventing, and DevOps. This practical book also delivers an architectural blueprint for a modern cloud-native application. You'll learn about microservices, containers, serverless computing, storage types, data considerations, portability, and the use of functions. Differentiate between containers and functions, and understand when to use which technology Leverage Service Meshes to move complexity, such as distributed tracing and mutual TLS handshakes, away from the developer Use messaging and eventing as the glue for the cloud-native composite applications Handle state-in distributed applications Understand what makes your application portable

This book constitutes the thoroughly refereed proceedings of the Second International Conference on Cloud Computing and Services Science, CLOSER 2012, held in Porto, Portugal, in April 2012. The 15 papers were selected from 145 submissions and are presented together with one invited paper. The papers cover the following topics: cloud computing fundamentals, services science foundation for cloud computing, cloud computing platforms and applications, and cloud computing enabling technology.

The complete reference guide to the hot technology of cloud computing Its potential for lowering IT costs makes cloud computing a major force for both IT vendors and users; it is expected to gain momentum rapidly with the launch of Office Web Apps later this year. Because cloud computing involves various technologies, protocols, platforms, and infrastructure elements, this comprehensive reference is just what you need if you'll be using or implementing cloud computing. Cloud computing offers significant cost savings by eliminating upfront expenses for hardware and software; its growing popularity is expected to skyrocket when Microsoft introduces Office Web Apps This comprehensive guide helps define what cloud computing is and thoroughly explores the technologies, protocols, platforms and infrastructure that make it so desirable Covers mobile cloud computing, a significant area due to ever-increasing cell phone and smartphone use Focuses on the platforms and technologies essential to cloud computing Anyone involved with planning, implementing, using, or maintaining a

several cloud computing projects Presents more than 400 references in the text, including recent research results in several areas related to cloud computing

Develop microservice-based enterprise applications with expert guidance to avoid failures and technological debt with the help of real-world examples

Key Features

Implement the right microservices adoption strategy to transition from monoliths to microservices

Explore real-world use cases that explain anti-patterns and alternative practices in microservices development

Discover proven recommendations for avoiding architectural mistakes when designing microservices

Book Description

Microservices have been widely adopted for designing distributed enterprise apps that are flexible, robust, and fine-grained into services that are independent of each other. There has been a paradigm shift where organizations are now either building new apps on microservices or transforming existing monolithic apps into microservices-based architecture. This book explores the importance of anti-patterns and the need to address flaws in them with alternative practices and patterns. You'll identify common mistakes caused by a lack of understanding when implementing microservices and cover topics such as organizational readiness to adopt microservices, domain-driven design, and resiliency and scalability of microservices. The book further demonstrates the anti-patterns involved in re-platforming brownfield apps and designing distributed data architecture. You'll also focus on how to avoid communication and deployment pitfalls and understand cross-cutting concerns such as logging, monitoring, and security. Finally, you'll explore testing pitfalls and establish a framework to address isolation, autonomy, and standardization. By the end of this book, you'll have understood critical mistakes to avoid while building microservices and the right practices to adopt early in the product life cycle to ensure the success of a microservices initiative.

What you will learn

Discover the responsibilities of different individuals involved in a microservices initiative

Avoid the common mistakes in architecting microservices for scalability and resiliency

Understand the importance of domain-driven design when developing microservices

Identify the common pitfalls involved in migrating monolithic applications to microservices

Explore communication strategies, along with their potential drawbacks and alternatives

Discover the importance of adopting governance, security, and monitoring

Understand the role of CI/CD and testing

Who this book is for

This practical microservices book is for software architects, solution architects, and developers involved in designing microservices architecture and its development, who want to gain insights into avoiding pitfalls and drawbacks in distributed applications, and save time and money that might otherwise get wasted if microservices designs fail. Working knowledge of microservices is assumed to get the most out of this book.

The primary purpose of this book is to capture the state-of-the-art in Cloud Computing technologies and applications. The book will also aim to identify potential research directions and technologies that will facilitate creation a global market-place of cloud computing services supporting scientific, industrial, business, and consumer applications. We expect the book to serve as a reference for larger audience such as systems architects, practitioners, developers, new researchers and graduate level students. This area of research is relatively recent, and as such has no existing reference book that addresses it. This book will be a timely contribution to a field that is gaining considerable research interest, momentum, and is expected to be of increasing

interest to commercial developers. The book is targeted for professional computer science developers and graduate students especially at Masters level. As Cloud Computing is recognized as one of the top five emerging technologies that will have a major impact on the quality of science and society over the next 20 years, its knowledge will help position our readers at the forefront of the field.

This book presents the latest research on Software Engineering Frameworks for the Cloud Computing Paradigm, drawn from an international selection of researchers and practitioners. The book offers both a discussion of relevant software engineering approaches and practical guidance on enterprise-wide software deployment in the cloud environment, together with real-world case studies. Features: presents the state of the art in software engineering approaches for developing cloud-suitable applications; discusses the impact of the cloud computing paradigm on software engineering; offers guidance and best practices for students and practitioners; examines the stages of the software development lifecycle, with a focus on the requirements engineering and testing of cloud-based applications; reviews the efficiency and performance of cloud-based applications; explores feature-driven and cloud-aided software design; provides relevant theoretical frameworks, practical approaches and future research directions.

Cyber security has become a topic of concern over the past decade as private industry, public administration, commerce, and communication have gained a greater online presence. As many individual and organizational activities continue to evolve in the digital sphere, new vulnerabilities arise. *Cyber Security and Threats: Concepts, Methodologies, Tools, and Applications* contains a compendium of the latest academic material on new methodologies and applications in the areas of digital security and threats. Including innovative studies on cloud security, online threat protection, and cryptography, this multi-volume book is an ideal source for IT specialists, administrators, researchers, and students interested in uncovering new ways to thwart cyber breaches and protect sensitive digital information.

Guide to Cloud Computing for Business and Technology Managers: From Distributed Computing to Cloudware Applications unravels the mystery of cloud computing and explains how it can transform the operating contexts of business enterprises. It provides a clear understanding of what cloud computing really means, what it can do, and when it is practical to use. Addressing the primary management and operation concerns of cloudware, including performance, measurement, monitoring, and security, this pragmatic book: Introduces the enterprise applications integration (EAI) solutions that were a first step toward enabling an integrated enterprise Details service-oriented architecture (SOA) and related technologies that paved the road for cloudware applications Covers delivery models like IaaS, PaaS, and SaaS, and deployment models like public, private, and hybrid clouds Describes Amazon, Google, and Microsoft cloudware solutions and services, as well as those of several other players Demonstrates how cloud computing can reduce costs, achieve business flexibility, and sharpen strategic focus Unlike customary discussions of cloud computing, *Guide to Cloud Computing for Business and Technology Managers: From Distributed Computing to Cloudware Applications* emphasizes the key differentiator—that cloud

computing is able to treat enterprise-level services not merely as discrete stand-alone services, but as Internet-locatable, composable, and repackagable building blocks for generating dynamic real-world enterprise business processes. Demystify architecting complex blockchain applications in enterprise environments Architecting Enterprise Blockchain Solutions helps engineers and IT administrators understand how to architect complex blockchain applications in enterprise environments. The book takes a deep dive into the intricacies of supporting and securing blockchain technology, creating and implementing decentralized applications, and incorporating blockchain into an existing enterprise IT infrastructure. Blockchain is a technology that is experiencing massive growth in many facets of business and the enterprise. Most books around blockchain primarily deal with how blockchains are related to cryptocurrency or focus on pure blockchain development. This book teaches what blockchain technology is and offers insights into its current and future uses in high performance networks and complex ecosystems. • Provides a practical, hands-on approach • Demonstrates the power and flexibility of enterprise blockchains such as Hyperledger and R3 Corda • Explores how blockchain can be used to solve complex IT support and infrastructure problems • Offers numerous hands-on examples and diagrams Get ready to learn how to harness the power and flexibility of enterprise blockchains!

This book constitutes extended, revised and selected papers from the 8th International Conference on Cloud Computing and Services Science, CLOSER 2018, held in Funchal, Portugal in March 2018. The 11 papers presented in this volume were carefully reviewed and selected from a total of 94 submissions. CLOSER 2018 is focused on the emerging area of Cloud Computing, inspired by some latest advances that concern the infrastructure, operations and available services throughout the global network.

A highly accessible reference offering a broad range of topics and insights on large scale network-centric distributed systems Evolving from the fields of high-performance computing and networking, large scale network-centric distributed systems continues to grow as one of the most important topics in computing and communication and many interdisciplinary areas. Dealing with both wired and wireless networks, this book focuses on the design and performance issues of such systems. Large Scale Network-Centric Distributed Systems provides in-depth coverage ranging from ground-level hardware issues (such as buffer organization, router delay, and flow control) to the high-level issues immediately concerning application or system users (including parallel programming, middleware, and OS support for such computing systems). Arranged in five parts, it explains and analyzes complex topics to an unprecedented degree: Part 1: Multicore and Many-Core (Mc) Systems-on-Chip Part 2: Pervasive/Ubiquitous Computing and Peer-to-Peer Systems Part 3: Wireless/Mobile Networks Part 4: Grid and Cloud Computing Part 5: Other Topics Related to Network-Centric Computing and Its Applications Large Scale Network-Centric Distributed Systems

is an incredibly useful resource for practitioners, postgraduate students, postdocs, and researchers.

Many professional fields have been affected by the rapid growth of technology and information. Included in this are the business and management markets as the implementation of e-commerce and cloud computing have caused enterprises to make considerable changes to their practices. With the swift advancement of this technology, professionals need proper research that provides solutions to the various issues that come with data integration and shifting to a technology-driven environment. *Cloud Computing Applications and Techniques for E-Commerce* is an essential reference source that discusses the implementation of data and cloud technology within the fields of business and information management. Featuring research on topics such as content delivery networks, virtualization, and software resources, this book is ideally designed for managers, educators, administrators, researchers, computer scientists, business practitioners, economists, information analysts, sociologists, and students seeking coverage on the recent advancements of e-commerce using cloud computing techniques.

Every day, companies struggle to scale critical applications. As traffic volume and data demands increase, these applications become more complicated and brittle, exposing risks and compromising availability. With the popularity of software as a service, scaling has never been more important. Updated with an expanded focus on modern architecture paradigms such as microservices and cloud computing, this practical guide provides techniques for building systems that can handle huge quantities of traffic, data, and demand—without affecting the quality your customers expect. Architects, managers, and directors in engineering and operations organizations will learn how to build applications at scale that run more smoothly and reliably to meet the needs of customers. Learn how scaling affects the availability of your services, why that matters, and how to improve it. Dive into a modern service-based application architecture that ensures high availability and reduces the effects of service failures. Explore the Single Team Owned Service Architecture paradigm (STOSA)—a model for scaling your development organization in tandem with your application. Understand, measure, and mitigate risk in your systems. Use the cloud to build highly scalable applications.

There are numerous publications which introduce and discuss the Internet of Things (IoT). In the midst of these, this work has several unique characteristics which should change the reader's perspective, and in particular, provide a more profound understanding of the impact of the IoT on society. *Dependable IoT for Human and Industry* covers the main aspects of Internet of Things and IoT based systems such as global issues of applications, modeling, development and implementation of dependable IoT for different human and industry domains. Technical topics discussed in the book include: Introduction in Internet of vital and trust Things, Modelling and assessment techniques for dependable and

secure IoT systemsArchitecting and development of IoT systemsImplementation of IoT for smart cities and drone fleets; business and blockchain, transport and industryTraining courses and education experience on Internet and Web of Thing Emerging as an effective alternative to organization-based information systems, cloud computing has been adopted by many businesses around the world. Despite the increased popularity, there remain concerns about the security of data in the cloud since users have become accustomed to having control over their hardware and software. Security, Trust, and Regulatory Aspects of Cloud Computing in Business Environments compiles the research and views of cloud computing from various individuals around the world. Detailing cloud security, regulatory and industry compliance, and trust building in the cloud, this book is an essential reference source for practitioners, professionals, and researchers worldwide, as well as business managers interested in an assembled collection of solutions provided by a variety of cloud users.

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