Cloud Computing Concepts Technology Architecture The Prentice Hall Service Technology Series From Thomas Erl

Fueled by ubiquitous computing ambitions, the edge is at the center of confluence of many emergent technological trends such as hardware-rooted trust and code integrity, 5G, data privacy and sovereignty, blockchains and distributed ledgers, ubiquitous sensors and drones, autonomous systems and real-time stream processing. Hardware and software pattern maturity have reached a tipping point so that scenarios like smart homes, smart factories, smart buildings, smart cities, smart grids, smart cars, smart highways are in reach of becoming a reality. While there is a great desire to bring born-in-the-cloud patterns and technologies such as zero-downtime software and hardware updates/upgrades to the edge, developers and operators alike face a unique set of challenges due to environmental differences such as resource constraints, network availability and heterogeneity of the environment. The first part of the book discusses various edge computing patterns which the authors have observed, and the reasons why these observations have led them to believe that there is a need for a new architectural paradigm for the new problem domain. Edge computing is examined from the app designer and architect's perspectives. When they design for edge computing, they need a new design language that can help them to express how capabilities are discovered, delivered and consumed, and how to leverage these capabilities regardless of location and network connectivity. Capability-Oriented Architecture is designed to provide a framework for all of these. This book is for everyone who is interested in understanding what ubiquitous and edge computing means, why it is growing in importance and its opportunities to you as a technologist or decision maker. The book covers the broad spectrum of edge environments, their challenges and how you can address them as a developer or an operator. The book concludes with an introduction to a new architectural paradigm called capability-based architecture, which takes into consideration the capabilities provided by an edge environment. .

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 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 Comprehensive and timely, Cloud Computing: Concepts and Technologies offers a thorough and detailed description of cloud computing concepts, architectures, and technologies, along with guidance on the best ways to understand and implement them. It covers the multi-core architectures, distributed and parallel computing models, virtualization, cloud developments, workload and Service-Level-Agreements (SLA) in cloud, workload management. Further, resource management issues in cloud with regard to resource provisioning, resource allocation, resource mapping and resource adaptation, ethical, non-ethical and security issues in cloud are followed by discussion of open challenges and future directions. This book gives students a comprehensive overview of the latest technologies and guidance on cloud computing, and is ideal for those studying the subject in specific modules or advanced courses. It is designed in twelve chapters followed by laboratory setups and experiments. Each chapter has multiple choice questions with answers, as well as review questions and critical thinking questions. The chapters are practically-focused, meaning that the information will also be relevant and useful for professionals wanting an overview of the topic.

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 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 Fog 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. Fog Computing:

Breakthroughs in Research and Practice contains a compendium of the latest academic material on the evolving theory and practice related to fog computing. Including innovative studies on distributed fog computing environments, programming models, and access control mechanisms, this publication is an ideal source for programmers, IT professionals, students, researchers, and engineers.

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.

This important text provides a single point of reference for state-of-the-art cloud computing design and implementation techniques. The book examines cloud computing from the perspective of enterprise architecture, asking the question; how do we realize new business potential with our existing enterprises? Topics and features: with a Foreword by Thomas Erl; contains contributions from an international selection of preeminent experts; presents the state-of-the-art in enterprise architecture approaches with respect to cloud computing models, frameworks, technologies, and applications; discusses potential research directions, and technologies to facilitate the realization of emerging business models through enterprise architecture approaches; provides relevant theoretical frameworks, and the latest empirical research findings.

The Cloud is an advanced and fast-growing technology in the current era. The computing paradigm has changed drastically. It provided a new insight into the computing world with new characteristics including on-demand, virtualization, scalability and many more. Utility computing, virtualization and service-oriented architecture (SoA) are the key characteristics of Cloud computing. The Cloud provides distinct IT services over the web on a pay-as-you-go and on-demand basis. Cloud Computing Technologies for Smart Agriculture and Healthcare covers Cloud management and its framework. It also focuses how the Cloud computing framework can be integrated with applications based on agriculture and healthcare. Features: Contains a systematic overview of the state-of-the-art, basic theories, challenges, implementation, and case studies on Cloud technology Discusses of recent research results and future advancement in virtualization technology Focuses on core theories, architectures, and technologies necessary to develop and understand the computing models and its applications Includes a wide range of examples that uses Cloud technology for increasing farm profitability and sustainable production Presents the farming industry with Cloud technology that allows it toaggregate, analyze, and share data across farms and the world Includes Cloud-based electronic health records with privacy and security features Offers suitable IT solutions to the global issues in the domain of agriculture and health care for society This reference book is aimed at undergraduate and post-graduate programs. It will also help research scholars in their research work. This book also benefits like scientists, business innovators, entrepreneurs, professionals, and practitioners.

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 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.

Unleash the power of cloud computing using Azure, AWS and Apache HadoopKey features Provides a sound understanding of the Cloud computing concepts, architecture and its applications Explores the practical benefits of Cloud computing services and deployment models in details Cloud Computing Architecture, Cloud Computing Life Cycle (CCLC), Load balancing approach, Mobile Cloud Computing (MCC), Google App Engine (GAE) Virtualization and Service-Oriented Architecture (SOA) Cloud Computing applications - Google Apps, Dropbox Cloud and Apple iCloud and its uses in various sectors - Education, Healthcare, Politics, Business, and Agriculture Cloud Computing platforms - Microsoft Azure, Amazon Web Services (AWS), Open Nebulla, Eucalyptus, Open Stack, Nimbus and The Apache Hadoop Architecture Adoption of Cloud Computing technology and strategies for migration to the cloud Cloud computing adoption case studies - Sub-Saharan Africa and India Chapter-wise Questions with Summary and Examination Model Question papers Description With the advent of internet, there is a complete paradigm shift in the manner we comprehend computing. Need to enable ubiquity, convenient and on-demand access to resources in highly scalable and resilient environments that can be remotely accessed, gave birth to the concept of Cloud computing. The acceptance is so rapid that the notion influences sophisticated innovations in academia, industry and research world-wide and hereby change the landscape of information technology as we thought of. Through this book, the authors tried to incorporate core principles and basic notion of cloud computing in a step-by-step manner and tried to emphasize on key concepts for clear and thorough insight into the subject.This book begins with the fundamentals of cloud computing, its service and deployment models, architecture, as well as applications and platforms. It presents some key enterprise strategies and models for the adoption of and migration to cloud. Privacy and security issues and challenges also form a major part of our discussion in the book as well as case studies of cloud computing adoption in Sub-Saharan Africa and India. The book concludes with a discussion of several advanced topics, such as Amazon Web Services (AWS), Open Nebulla, Microsoft Azure, Apache Hadoop and Google App Engine (GAE). What will you learn Learn about the Importance of Cloud Computing in Current Digital Era Understand the Core concepts and Principles of Cloud Computing with practical benefits Learn about the Cloud Deployment models and Services Discover how Cloud Computing Architecture works Learn about the Load balancing approach and Mobile Cloud Computing (MCC) Learn about the Virtualization and Service-Oriented Architecture (SOA) concepts Learn about the various Cloud Computing applications, Platforms and Security concepts Understand the adoption Cloud Computing technology and strategies for migration to the cloud Case Studies for Cloud computing adoption - Sub-Saharan Africa and India Who this book is forThis book is intended for students of B.E., B.Tech., B.Sc., M.Sc., M.E., and M.Tech. as a text book. The content is designed keeping in mind the bench marked curriculum of various universities (both National and International). The book covers not only the technical details of how cloud works but also exhibits the strategy, technical design, and in-depth knowledge required to migrate existing applications to the cloud. Therefore, it makes it relevant for the beginners who wants to learn cloud computing right from the foundation. Aspiring Cloud Computing Researchers Instructors,

Academicians and Professionals, if they are familiar with cloud, can use this book to learn various open source cloud computing tools, applications, technologies. They will also get a flavor of various international certification exams available. Table of contents1. Foundation of Cloud Computing 2. Cloud Services and Deployment Models3. Cloud Computing Architecture4. Virtualization Technology5. Service Oriented Architecture6. Cloud Security and Privacy7. Cloud Computing Applications8. Cloud Computing Technologies, Platform and Services9. Adoption of Cloud Computing10. Model Paper 111. Model Paper 212. Model Paper 313. Model Paper 4 About the authorKamal Kant Hiran is working as Associate Professor & Head IT in the BlueCrest University College, Liberia, West Africa as well as Research Fellow, Aalborg University, Copenhagen, Denmark. He has rich experience of 14+ years as an academician and researcher in Asia, Africa and Europe. His research interests include Cloud Computing adoption theories and framework, Internet of Things (IoT) and Digital Image and Video Processing. He has several awards on his credit such as International travel grant for Germany from ITS Europe, Gold Medal Award in M. Tech (ICT), IEEE Ghana Section Award, IEEE Senior Member Recognition, IEEE Student branch award and Best Research paper award from the University of Gondar, Ethiopia. He has published research papers in peer-reviewed international journals and conferences. He is Reviewer and Editorial board member of various reputed International Journals in Elsevier, Springer, IEEE, Bentham Science, IGI Global, IJSET, IJTEE, IJSTR and IJERT. He is the active member in organizing many international seminars, workshops and conferences in India, Ghana, Liberia, Denmark, Jordan and Ethiopia.His website: http://www.kamalhiran.in/His LinkedIn profile: https://www.linkedin.com/in/kamal-kant-hiran-4553b643Ruchi Doshi is having more than 10 years of academic, research and software development experience in Asia and Africa. She is working as Registrar in the BlueCrest University College, Liberia, West Africa an also worked with BlueCrest University College, Ghana; Amity University, India & Trimax IT Infrastructure & Services as software engineer. She is interested in the field of Cloud computing, Computer vision, Artificial Intelligence and latest technology used in the higher education. She has published research papers in peer-reviewed international journals and conferences. She is Reviewer, Advisor, Ambassador & Editorial board member of various reputed International Journals and Conferences such as MIR Labs, USA, IEEE W4S, IJCS and IJERT. She is the active member in organizing many international events in India, Ghana, and Liberia. Her LinkedIn profile: https://www.linkedin.com/in/ruchi-doshi-96bb63b4 Dr. Fagbola Temitayo is currently a Post-Doctoral Fellow (PDF) at Durban University of Technology, South Africa and an Assistant Professor in the Department of Computer Science, Federal University, Oye-Ekiti, Nigeria with over 10 years of proven teaching and research experience. He bagged a Ph.D., M.Sc and B.Tech degrees in Computer Science with strong research interests in cloud computing ecosystem, deep learning, computational intelligence, social media big-data analytics, information security, decision support system and video processing. Dr Fagbola is a member of the South African Institute of Computer Scientists and Information Technologists (SAICSIT), Asian Council of Science Editors (ACSE), Machine Intelligence Institute of Africa (MIIA), Computer Professionals (Registration Council) of Nigeria (CPN), the International Association of Engineers (IAENG) and DataHack4FI in Africa. He has over 50 refereed publications in referred international journals and conference proceedings to his credit and currently serves as a reviewer for over 15 reputable international journals. He is also a recipient of the ACM FAT's grant in November 2018.His LinkedIn profile: https://www.linkedin.com/in/temitayo-fagbola-5941a2169Mehul Mahrishi is currently working as an Associate Professor in the Faculty of Computer Science & Engineering at the Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur, India. He is a life member of International Association of Engineers and has published several research articles in National/International Journals, Conferences including Global Journals, ICCCTAM-Dubai, ICMLC-Singapore, IACC and chapters in books. He is also an active technical reviewer of Journal of Parallel and Distributed Computing (SCI & Scopus-Elsevier). His research activities are currently twofold: while the first research activity is set to explore the developmental enhancements video processing and analysis; the second major research theme is focused on the emerging capabilities of cloud computing. Mr. Mahrishi is rewarded at number of occasions in various domains including Recognition as an active reviewer by Journal of Parallel and Distributed Computing (JPDC, Elsevier, SCI & Scopus Indexed), IEEE continuing education certification for "e;Cloud Computing Enable Technologies and Recognition for outstanding performance in Campus Connect Program by Infosys, India.His LinkedIn profile: https://www.linkedin.com/in/mehuk-mahrishi-30979026

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. To successfully build upon, integrate with, or even create a cloud environment requires an understanding of its common inner mechanics, architectural layers, and models, as well as an understanding of the business and economic factors that result from the adoption and real-world use of cloud-based services. In Cloud Computing: Concepts, Technology & Architecture, Thomas Erl, one of the world's top-selling IT authors, teams up with cloud computing experts and researchers to break down proven and mature cloud computing technologies and practices into a series of well-defined concepts, models, technology mechanisms, and technology architectures, all from an industry-centric and vendor-neutral point of view. In doing so, the book establishes concrete, academic coverage with a focus on structure, clarity, and well-defined building blocks for mainstream cloud computing platforms and solutions. Subsequent to technology-centric coverage, the book proceeds to establish business-centric models and metrics that allow for the financial assessment of cloud-based IT resources and their comparison to those hosted on traditional IT enterprise premises. Also provided are templates and formulas for calculating SLA-related quality-of-service values and numerous explorations of the SaaS, PaaS, and IaaS delivery models. With more than 260 figures, 29 architectural models, and 20 mechanisms, this indispensable guide provides a comprehensive education of cloud computing essentials that will never leave your side. Contains a variety of cloud computing technologies and explores how the cloud can enhance business operations Cloud Technologies offers an accessible guide to cloud-based systems and clearly explains how these technologies have changed the way organizations approach and implement their computing infrastructure. The author—a noted expert on the topic—includes an overview of cloud computing and addresses business-related considerations such as service level agreements, elasticity, security, audits, and practical implementation issues. In addition, the book covers important topics such as automation, infrastructure as code, DevOps, orchestration, and edge computing. Cloud computing fundamentally changes the way organizations think about and implement IT infrastructure. Any manager without a firm grasp of basic cloud concepts is at a huge disadvantage in the modern world. Written for all levels of managers working in IT and other areas, the book explores cost savings and enhanced capabilities, as well as identifies different models for implementing cloud technologies and tackling cloud business concerns. This important book: Demonstrates a variety of cloud computing technologies and ways the cloud can enhance business operations Addresses data security concerns in cloud computing relevant to corporate data owners Shows ways the cloud can save money for a business Offers a companion website hosting PowerPoint slides Written for managers in the fields of business, IT and cloud computing, Cloud Technologies describes cloud computing concepts and related strategies and operations in accessible language.

This handbook offers a comprehensive overview of cloud computing security technology and implementation while exploring practical solutions to a wide range of cloud computing security issues. As more organizations use cloud computing and cloud providers for data operations, the need for proper security in these and other potentially vulnerable areas has become a global priority for organizations of all sizes. Research efforts from academia and industry as conducted and reported by experts in all aspects of security related to cloud computing are gathered within one reference guide. Features • Covers patching and configuration vulnerabilities of a cloud server • Evaluates methods for data encryption and long-term storage in a cloud server • Demonstrates how to verify identity using a certificate chain and how to detect inappropriate changes to data or system configurations John R. Vacca is an information technology consultant and internationally known author of more than 600 articles in the areas of advanced storage, computer security, and aerospace technology. John

was also a configuration management specialist, computer specialist, and the computer security official (CSO) for NASA's space station program (Freedom) and the International Space Station Program from 1988 until his 1995 retirement from NASA.

Uncovers the growing and expanding phenomenon of human behavior, social constructs, and communication in online environments.

"This book continues the very high standard we have come to expect from ServiceTech Press. The book provides well-explained vendor-agnostic patterns to the challenges of providing or using cloud solutions from PaaS to SaaS. The book is not only a great patterns reference, but also worth reading from cover to cover as the patterns are thought-provoking, drawing out points that you should consider and ask of a potential vendor if you're adopting a cloud solution." --Phil Wilkins, Enterprise Integration Architect, Specsavers "Thomas Erl's text provides a unique and comprehensive perspective on cloud design patterns that is clearly and concisely explained for the technical professional and layman alike. It is an informative, knowledgeable, and powerful insight that may guide cloud experts in achieving extraordinary results based on extraordinary expertise identified in this text. I will use this text as a resource in future cloud designs and architectural considerations." --Dr. Nancy M. Landreville, CEO/CISO, NML Computer Consulting The Definitive Guide to Cloud Architecture and Design Best-selling service technology author Thomas Erl has brought together the de facto catalog of design patterns for modern cloud-based architecture and solution design. More than two years in development, this book's 100+ patterns illustrate proven solutions to common cloud challenges and requirements. Its patterns are supported by rich, visual documentation, including 300+ diagrams. The authors address topics covering scalability, elasticity, reliability, resiliency, recovery, data management, storage, virtualization, monitoring, provisioning, administration, and much more. Readers will further find detailed coverage of cloud security, from networking and storage safeguards to identity systems, trust assurance, and auditing. This book's unprecedented technical depth makes it a must-have resource for every cloud technology architect, solution designer, developer, administrator, and manager. Topic Areas Enabling ubiquitous, on-demand, scalable network access to shared pools of configurable IT resources Optimizing multitenant environments to efficiently serve multiple unpredictable consumers Using elasticity best practices to scale IT resources transparently and automatically Ensuring runtime reliability, operational resiliency, and automated recovery from any failure Establishing resilient cloud architectures that act as pillars for enterprise cloud solutions Rapidly provisioning cloud storage devices, resources, and data with minimal management effort Enabling customers to configure and operate custom virtual networks in SaaS, PaaS, or IaaS environments Efficiently provisioning resources, monitoring runtimes, and handling day-to-day administration Implementing best-practice security controls for cloud service architectures and cloud storage Securing on-premise Internet access, external cloud connections, and scaled VMs Protecting cloud services against denial-of-service attacks and traffic hijacking Establishing cloud authentication gateways, federated cloud authentication, and cloud key management Providing trust attestation services to customers Monitoring and independently auditing cloud security Solving complex cloud design problems with compound super-patterns

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 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

Cloud computing promises to revolutionize IT and business by making computing available as a utility over the internet. This book is intended primarily for practising software architects who need to assess the impact of such a transformation. It explains the evolution of the internet into a cloud computing platform, describes emerging development paradigms and technologies, and discusses how these will change the way enterprise applications should be architected for cloud deployment. Gautam Shroff provides a technical description of cloud computing technologies, covering cloud infrastructure and platform services, programming paradigms such as MapReduce, as well as 'do-it-yourself' hosted development tools. He also describes emerging technologies critical to cloud computing. The book also covers the fundamentals of enterprise computing, including a technical introduction to enterprise architecture, so it will interest programmers aspiring to become software architects and serve as a reference for a graduate-level course in software architecture or software engineering.

Web services are leading to the use of more packaged software either as an internal service or an external service available over the Internet. These services, which will be connected together to create the information technology systems of the future, will require less custom software in our organizations and more creativity in the connections between the services. This book begins with a high-level example of how an average person in an organization might interact with a service-oriented architecture. As the book progresses, more technical detail is added in a "peeling of the onion" approach. The leadership opportunities within these developing service-oriented architectures are also explained. At the end of the book there is a compendium or "pocket library" for software technology related to service-oriented architectures. · Only web services book to cover both data management and software engineering perspectives, excellent resource for ALL members of IT teams · Jargon free, highly illustrated, with introduction that anyone can read that then leads into increasing technical detail · Provides a set of leadership principles and suggested application for using this technology.

This book focuses on big data in business intelligence, data management, machine learning, cloud computing, and smart cities. It also provides an interdisciplinary platform to present and discuss recent innovations, trends, and concerns in the fields of big data and analytics. Big Data Analysis for Green Computing: Concepts and Applications presents the latest technologies and covers the major challenges, issues, and advances of big data and data analytics in green computing. It explores basic as well as high-level concepts. It also includes the use of machine learning using big data and discusses advanced system implementation for smart cities. The book is intended for business and management educators, management researchers, doctoral scholars, university professors, policymakers, and higher academic research organizations.

"This reference presents a vital compendium of research detailing the latest case studies, architectures, frameworks, methodologies, and research on Grid and Cloud Computing"--

Cloud Enterprise Architecture examines enterprise architecture (EA) in the context of the surging popularity of Cloud computing. It explains the different kinds of desired transformations the architectural blocks of EA undergo in light of this strategically significant convergence. Chapters cover each of the contributing architectures of EA—business, information, application, integration, security, and technology—illustrating the current and impending implications of the Cloud on each. Discussing the implications of the Cloud paradigm on EA, the book details the perceptible and positive changes that will affect EA design, governance, strategy, management, and sustenance. The author ties these topics together with chapters on Cloud integration and composition architecture. He also examines the Enterprise Cloud, Federated Clouds, and the vision to establish the InterCloud. Laying out a comprehensive strategy for planning and executing Cloud-inspired transformations, the book: Explains how the Cloud changes and affects enterprise architecture design, governance, strategy, management, and sustenance Presents helpful information on next-generation Cloud computing Describes additional architectural types such as enterprise-scale integration, security, management, and governance architectures This book is an ideal resource for enterprise architects,

Cloud evangelists and enthusiasts, and Cloud application and service architects. Cloud center administrators, Cloud business executives, managers, and analysts will also find the book helpful and inspirational while formulating appropriate mechanisms and schemes for sound modernization and migration of traditional applications to Cloud infrastructures and platforms.

Your Complete Guide to Cloud Computing and Migrating to the Cloud. This book covers not only the technical details of how public and private cloud technology works but also the strategy, technical design, and in-depth implementation details required to migrate existing applications to the cloud. After reading this book, you will have a much better understanding of cloud technology and the steps required to quickly reap its benefits while at the same time lowering your IT implementation risk. Written by a proven expert in cloud computing, business management, network engineering, and IT security. This is a must-read for IT management, CIOs, senior IT engineers, and program managers in the government, DoD, and commercial sectors.

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.

Accelerating Business and Mission Success with Cloud Computing. Key Features A step-by-step guide that will practically guide you through implementing Cloud computing services effectively and efficiently. Learn to choose the most ideal Cloud service model, and adopt appropriate Cloud design considerations for your organization. Leverage Cloud computing methodologies to successfully develop a cost-effective Cloud environment successfully. Book Description Cloud adoption is a core component of digital transformation. Scaling the IT environment, making it resilient, and reducing costs are what organizations want. Architecting Cloud Computing Solutions presents and explains critical Cloud solution design considerations and technology decisions required to choose and deploy the right Cloud service and deployment models, based on your business and technology service requirements. This book starts with the fundamentals of cloud computing and its architectural concepts. It then walks you through Cloud service models (IaaS, PaaS, and SaaS), deployment models (public, private, community, and hybrid) and implementation options (Enterprise, MSP, and CSP) to explain and describe the key considerations and challenges organizations face during cloud migration. Later, this book delves into how to leverage DevOps, Cloud-Native, and Serverless architectures in your Cloud environment and presents industry best practices for scaling your Cloud environment. Finally, this book addresses (in depth) managing essential cloud technology service components such as data storage, security controls, and disaster recovery. By the end of this book, you will have mastered all the design considerations and operational trades required to adopt Cloud services, no matter which cloud service provider you choose. What you will learn Manage changes in the digital transformation and cloud transition process Design and build architectures that support specific business cases Design, modify, and aggregate baseline cloud architectures Familiarize yourself with cloud application security and cloud computing security threats Design and architect small, medium, and large cloud computing solutions Who this book is for If you are an IT Administrator, Cloud Architect, or a Solution Architect keen to benefit from cloud adoption for your organization, then this book is for you. Small business owners, managers, or consultants will also find this book useful. No prior knowledge of Cloud computing is needed.

Cloud computing-accessing computing resources over the Internet-is rapidly changing the landscape of information technology. Its primary benefits compared to on-premise computing models are reduced costs and increased agility and scalability. Hence, cloud computing is receiving considerable interest among several stakeholders-businesses, the IT ind

Cloud Computing is here to stay. As an economically viable way for businesses of all sizes to distribute computing, this technology shows tremendous promise. But the intense hype surrounding the Cloud is making it next to impossible for responsible IT managers and businessdecision-makers to get a clear understanding of what the Cloud really means, what it might do for them, when it is practical, and what their future with the Cloud looks like. The Cloud at Your Service helps cut through all this fog to help enterprises make these critical decisions based on facts and the authors' informed unbiased recommendations and predictions. Purchase of the print book comes with an offer of a free PDF, ePub, and Kindle eBook from Manning. Also available is all code from the book.

Why cloud computing represents a paradigm shift for business, and how business users can best take advantage of cloud services. Most of the information available on cloud computing is either highly technical, with details that are irrelevant to non-technologists, or pure marketing hype, in which the cloud is simply a selling point. This book, however, explains the cloud from the user's viewpoint—the business user's in particular. Nayan Ruparelia explains what the cloud is, when to use it (and when not to), how to select a cloud service, how to integrate it with other technologies, and what the best practices are for using cloud computing. Cutting through the hype, Ruparelia cites the simple and basic definition of cloud computing from the National Institute of Science and Technology: a model enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources. Thus with cloud computing, businesses can harness information technology resources usually available only to large enterprises. And this, Ruparelia demonstrates, represents a paradigm shift for business. It will ease funding for startups, alter business plans, and allow big businesses greater agility. Ruparelia discusses the key issues for any organization considering cloud computing: service level agreements, business service delivery and consumption, finance, legal jurisdiction, security, and social responsibility. He introduces novel concepts made possible by cloud computing: cloud cells, or specialist clouds for specific uses; the personal cloud; the cloud of things; and cloud service exchanges. He examines use case patterns in terms of infrastructure and platform, software information, and business process; and he explains how to transition to a cloud service. Current and future users will find this book an indispensable guide to the cloud.

Learn and understand the need to architect cloud applications and migrate your business to cloud efficiently Key Features Understand the core design elements required to build scalable systems Plan resources and technology stacks effectively for high security and fault tolerance Explore 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. To harness this, businesses need to refresh their development models and architectures when they find they don't port to the cloud. Cloud Native Architectures demonstrates three essential components of deploying modern cloud native architectures: organizational transformation, deployment modernization, and cloud native architecture patterns. This book starts with a quick introduction to cloud native architectures that are used as a base to define and explain what cloud native architecture is and is not. You will learn what a cloud adoption framework looks like and develop cloud native architectures using microservices and serverless computing as design principles. You'll then explore the major pillars of cloud native design including scalability, cost optimization, security, and ways to achieve operational excellence. In the concluding chapters, you will also learn about various public cloud architectures ranging from AWS and Azure to the Google Cloud Platform. By the end of this book, you will have learned the techniques to adopt cloud native architectures that meet your business requirements. You will also understand the future trends and expectations of cloud providers. What you will learn Learn the difference between cloud native and traditional architecture Explore the aspects of migration, when and why to use it Identify the elements to consider when selecting a technology for your architecture Automate security controls and configuration management Use infrastructure as code and CICD pipelines to run environments in a sustainable manner Understand the management and monitoring capabilities for AWS cloud native application architectures Who this book is for Cloud Native Architectures is for software architects who are keen on designing resilient, scalable, and

highly available applications that are native to the cloud.

In the era of Internet of Things and with the explosive worldwide growth of electronic data volume, and associated need of processing, analysis, and storage of such humongous volume 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 computing framework for 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. This book presents some critical applications in cloud frameworks along with some innovation design of algorithms and architecture for deployment in cloud environment. 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.

An expert guide to selecting the right cloud service model for your business Cloud computing is all the rage, allowing for the delivery of computing and storage capacity to a diverse community of end-recipients. However, before you can decide on a cloud model, you need to determine what the ideal cloud service model is for your business. Helping you cut through all the haze, Architecting the Cloud is vendor neutral and guides you in making one of the most critical technology decisions that you will face: selecting the right cloud service model(s) based on a combination of both business and technology requirements. Guides corporations through key cloud design considerations Discusses the pros and cons of each cloud service model Highlights major design considerations in areas such as security, data privacy, logging, data storage, SLA monitoring, and more Clearly defines the services cloud providers offer for each service model and the cloud services IT must provide Arming you with the information you need to choose the right cloud service provider, Architecting the Cloud is a comprehensive guide covering everything you need to be aware of in selecting the right cloud service model for you.

Cloud computing is changing the way businesses and users interact with computers and mobile devices. Gone are the days of expensive data centers, racks of disk drives, and large IT support teams. In their place are software applications delivered to users on demand from the cloud, high-capacity, auto-replicated, secure cloud-based disk-storage and databases, virtualized-server and desktop environments, and cloud-based collaboration tools which support on-premise-, remote-, and hybrid-team success. Within the pages of Cloud Computing, readers will find a hands-on introduction to the cloud, which will have them using cloud-based data storage to store personal documents and to share photos and other digital media with other users and their own various devices, performing cloud-based automated backups, and using other cloud-based applications by the end of Chapter 1! Readers will learn specifics about software as a service (Saas), platform as a service (Paas), infrastructure as a service (IaaS), server and desktop virtualization, and much more. Each chapter of the book presents a cloud topic, examines the underlying business case, and then takes the reader on a test drive. The chapters are filled with real-world case studies. The book's content is ideal for users wanting to migrate to the cloud, IT professionals seeking knowledge on cloud fundamentals, developers who will build the cloud solutions of the future, and CIOs wanting insights on the most recent cloud solutions.

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

The current work provides CIOs, software architects, project managers, developers, and cloud strategy initiatives with a set of architectural patterns that offer nuggets of advice on how to achieve common cloud computing-related goals. The cloud computing patterns capture knowledge and experience in an abstract format that is independent of concrete vendor products. Readers are provided with a toolbox to structure cloud computing strategies and design cloud application architectures. By using this book cloud-native applications can be implemented and best suited cloud vendors and tooling for individual usage scenarios can be selected. The cloud computing patterns offer a unique blend of academic knowledge and practical experience due to the mix of authors. Academic knowledge is brought in by Christoph Fehling and Professor Dr. Frank Leymann who work on cloud research at the University of Stuttgart. Practical experience in building cloud applications, selecting cloud vendors, and designing enterprise architecture as a cloud customer is brought in by Dr. Ralph Retter who works as an IT architect at T?Systems, Walter Schupeck, who works as a Technology Manager in the field of Enterprise Architecture at Daimler AG,and Peter Arbitter, the former head of T Systems' cloud architecture and IT portfolio team and now working for Microsoft. Voices on Cloud Computing Patterns Cloud computing is especially beneficial for large companies such as Daimler AG. Prerequisite is a thorough analysis of its impact on the existing applications and the IT architectures. During our collaborative research with the University of Stuttgart, we identified a vendor-neutral and structured approach to describe properties of cloud offerings and requirements on cloud environments. The resulting Cloud Computing Patterns have profoundly impacted our corporate IT strategy regarding the adoption of cloud computing. They help our architects, project managers and developers in the refinement of architectural guidelines and communicate requirements to our integration partners and software suppliers. Dr. Michael Gorriz – CIO Daimler AG Ever since 2005 T-Systems has provided a flexible and reliable cloud platform with its "Dynamic Services". Today these cloud services cover a huge variety of corporate applications, especially enterprise resource planning, business intelligence, video, voice communication, collaboration, messaging and mobility services. The book was written by senior cloud pioneers sharing their technology foresight combining essential information and practical experiences. This valuable compilation helps both practitioners and clients to really understand which new types of services are readily available, how they really work and importantly how to benefit from the cloud. Dr. Marcus Hacke – Senior Vice President, T-Systems International GmbH This book provides a conceptual framework and very timely guidance for people and organizations building applications for the cloud. Patterns are a proven approach to building robust and sustainable applications and systems. The authors adapt and extend it to cloud computing, drawing on their own experience and deep contributions to the field. Each pattern includes an extensive discussion of the state of the art,

with implementation considerations and practical examples that the reader can apply to their own projects. By capturing our collective knowledge about building good cloud applications and by providing a format to integrate new insights, this book provides an important tool not just for individual practitioners and teams, but for the cloud computing community at large. Kristof Kloeckner – General Manager,Rational Software, IBMSoftware Group

A comprehensive review of the key emerging technologies that will directly impact areas of computer technology over the next five years Infrastructure edge computing is the model of data center and network infrastructure deployment which distributes a large number of physically small data centers around an area to deliver better performance and to enable new economical applications. It is vital for those operating at business or technical levels to be positioned to capitalize on the changes that will occur as a result of infrastructure edge computing. Understanding Infrastructure Edge Computing provides a thorough understanding of the growth of internet infrastructure from its inception to the emergence of infrastructure edge computing. Author Alex Marcham, an acknowledged leader in the field who coined the term infrastructure edge computing, presents an accessible, accurate, and expansive view of the next generation of internet infrastructure. The book features illustrative examples of 5G mobile cellular networks, city-scale AI systems, self-driving cars, drones, industrial robots, and moretechnologies that increase efficiency, save time and money, and improve safety. Covering state-of-the-art topics, this timely and authoritative book: Presents a clear and accurate survey of the key emerging technologies that will impact data centers, 5G networks, artificial intelligence and cyber-physical systems, and other areas of computer technology Explores how and why Internet infrastructure has evolved to where it stands today and where it needs to be in the near future Covers a wide range of topics including distributed application workload operation, infrastructure and application security, and related technologies such as multi-access edge computing (MEC) and fog computing Provides numerous use cases and examples of real-world applications which depend upon underlying edge infrastructure Written for Information technology practitioners, computer technology practitioners, and students, Understanding Infrastructure Edge Computing is essential reading for those looking to benefit from the coming changes in computer technology in the near future.

The ultimate guide to assessing and exploiting the customervalue and revenue potential of the Cloud A new business model is sweeping the world—the Cloud. And,as with any new technology, there is a great deal of fear,uncertainty, and doubt surrounding cloud computing.Cloudonomics radically upends the conventional wisdom,clearly explains the underlying principles and illustrates throughunderstandable examples how Cloud computing can create compellingvalue—whether you are a customer, a provider, a strategist,or an investor. Cloudonomics covers everything you need toconsider for the delivery of business solutions, opportunities, andcustomer satisfaction through the Cloud, so you can understandit—and put it to work for your business. Cloudonomicsalso delivers insight into when to avoid the cloud, and why. Quantifies how customers, users, and cloud providers cancollaborate to create win-wins Reveals how to use the Laws of Cloudonomics to define strategyand guide implementation Explains the probable evolution of cloud businesses andecosystems Demolishes the conventional wisdom on cloud usage, IT spend,community clouds, and the enterprise-provider cloud balance Whether you're ready for it or not, Cloud computing is here tostay. Cloudonomics provides deep insights into the businessvalue of the Cloud for executives, practitioners, and strategistsin virtually any industry—not just technology executives butalso those in the marketing, operations, economics, venturecapital, and financial fields.

Cloud ComputingConcepts, Technology & ArchitecturePearson Education

"Service Oriented Architecture is a hot, but often misunderstood topic in IT today. Thomas articulately describes the concepts, specifications, and standards behind service orientation and Web Services. For enterprises adopting SOA, there is detailed advice for service-oriented analysis, planning, and design. This book is a must read!" --Alex Lynch, Principal Consultant, Microsoft Enterprise Services "One primary objective of applying SOA in design is to provide business value to the solutions we build. Understanding the right approach to analyzing, designing, and developing service-oriented solutions is critical. Thomas has done a great job of demystifying SOA in practical terms with his book." --Rick Weaver, IBM Senior Consulting Certified SW I/T Specialist "A pragmatic guide to SOA principles, strategy, and best practices that distills the hype into a general framework for approaching SOA adoption in complex enterprise environments." --Sameer Tyagi, Senior Staff Engineer, Sun Microsystems "A very timely and much needed contribution to a rapidly emerging field. Through clarifying the principles and nuances of this space, the author provides a comprehensive treatment of critical key aspects of SOA from analysis and planning to standards ranging from WS-specifications to BPEL. I''ll be recommending this book to both clients and peers who are planning on embracing SOA principles." --Ravi Palepu, Senior Field Architect, Rogue Wave Software "Finally, an SOA book based on real implementation experience in production environments. Too many SOA books get lost in the technical details of Web Services standards, or simply repeat vendor hype. This book covers the really hard parts: the complex process of planning, designing and implementing service-oriented architectures that meet organizational goals. It is an essential companion to any software developer, architect, or project manager implementing--or thinking about implementing--a service-oriented architecture." --Priscilla Walmsley, Managing Director of Datypic "Thomas Erl''s Service-Oriented Architecture: Concepts, Technology, and Design is as good an introduction to service-oriented architectures as one could wish for. In a single volume, it covers the entire topic, from theory to real-world use to technical details. The examples are superb and the writing is wonderfully clear." --Ronald Bourret, Author, "XML and Databases" "Finally an SOA book which gets to the point with real world answers and examples. Erl guides you on a real world SOA journey. From architecture design to industry standards, this book is well written and can be easily referenced for everyday use. When embarking on your own service orientated adventures, this is the book you want in your bag." --Clark Sell, Vice President, CSell Incorporated "Organizations struggling to evolve existing service-oriented solutions beyond simple Web Services now

have an expert resource available. Leading the way to the true service-oriented enterprise, Thomas Erl demystifies the complexities of the open WS-I standards with detailed practical discussions and case studies. Erl''s depth and clarity makes this work a superb complement to his Field Guide." --Kevin P. Davis, PhD., Software Architect "This book is an excellent guide for architects, developers, and managers who are already working with or are considering developing Web Services or Service-Oriented Architecture solutions. The book is divided into four sections. In the first section the fundamental technologies of XML, Web Services and Service-Oriented Architectures are described in detail with attention given to emerging standards. The book is well written and very thorough in its coverage of the subject. I recommend this book highly to anyone interested in enterprise level service architectures." --Adam Hocek, President and CTO, Broadstrokes, Inc. Additional praise quotes are published at: www.soabooks.com/reviews.asp The foremost "how-to" guide to SOA Service-Oriented Architecture (SOA) is at the heart of a revolutionary computing platform that is being adopted world-wide and has earned the support of every major software provider. In Service-Oriented Architecture: Concepts, Technology, and Design, Thomas Erl presents the first end-to-end tutorial that provides step-by-step instructions for modeling and designing service-oriented solutions from the ground up. Erl uses more than 125 case study examples and over 300 diagrams to illuminate the most important facets of building SOA platforms: goals, obstacles, concepts, technologies, standards, delivery strategies, and processes for analysis and design. His book''s broad coverage includes Detailed step-by-step processes for service-oriented analysis and service-oriented design An in-depth exploration of service-orientation as a distinct design paradigm, including a comparison to object-orientation A comprehensive study of SOA support in .NET and J2EE development and runtime platforms Descriptions of over a dozen key Web services technologies and WS-* specifications, including explanations of how they interrelate and how they are positioned within SOA The use of "In Plain English" sections, which describe complex concepts through non-technical analogies Guidelines for service-oriented business modeling and the creation of specialized service abstraction layers A study contrasting past architectures with SOA and reviewing current industry influences Project planning and the comparison of different SOA delivery strategies The goal of this book is to help you attain a solid understanding of what constitutes contemporary SOA along with step-by-step guidance for realizing its successful implementation. About the Web Sites Erl''s Service-Oriented Architecture books are supported by two Web sites. http:// www.soabooks.com provides a variety of content resources and http:// www.soaspecs.com supplies a descriptive portal to referenced specifications. Copyright Pearson Education. All rights reserved.

Learn Big Data from the ground up with this complete and up-to-date resource from leaders in the field Big Data: Concepts, Technology, and Architecture delivers a comprehensive treatment of Big Data tools, terminology, and technology perfectly suited to a wide range of business professionals, academic researchers, and students. Beginning with a fulsome overview of what we mean when we say, "Big Data," the book moves on to discuss every stage of the lifecycle of Big Data. You'll learn about the creation of structured, unstructured, and semi-structured data, data storage solutions, traditional database solutions like SQL, data processing, data analytics, machine learning, and data mining. You'll also discover how specific technologies like Apache Hadoop, SQOOP, and Flume work. Big Data also covers the central topic of big data visualization with Tableau, and you'll learn how to create scatter plots, histograms, bar, line, and pie charts with that software. Accessibly organized, Big Data includes illuminating case studies throughout the material, showing you how the included concepts have been applied in real-world settings. Some of those concepts include: The common challenges facing big data technology and technologists, like data heterogeneity and incompleteness, data volume and velocity, storage limitations, and privacy concerns Relational and non-relational databases, like RDBMS, NoSQL, and NewSQL databases Virtualizing Big Data through encapsulation, partitioning, and isolating, as well as big data server virtualization Apache software, including Hadoop, Cassandra, Avro, Pig, Mahout, Oozie, and Hive The Big Data analytics lifecycle, including business case evaluation, data preparation, extraction, transformation, analysis, and visualization Perfect for data scientists, data engineers, and database managers, Big Data also belongs on the bookshelves of business intelligence analysts who are required to make decisions based on large volumes of information. Executives and managers who lead teams responsible for keeping or understanding large datasets will also benefit from this book.

As the Web grows and expands into ever more remote parts of the world, the availability of resources over the Internet increases exponentially. Making use of this widely prevalent tool, organizations and individuals can share and store knowledge like never before. Cloud Technology: Concepts, Methodologies, Tools, and Applications investigates the latest research in the ubiquitous Web, exploring the use of applications and software that make use of the Internet's anytime, anywhere availability. By bringing together research and ideas from across the globe, this publication will be of use to computer engineers, software developers, and end users in business, education, medicine, and more.

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 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.

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