

## Chapter 4 Cloud Computing Applications And Paradigms

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### **TIANA OSBORN**

*Cloud Computing Fundamentals* Bentham Science Publishers

The book 'Data Intensive Computing Applications for Big Data' discusses the technical concepts of big data, data intensive computing through machine learning, soft computing and parallel computing paradigms. It brings together researchers to report their latest results or progress in the development of the above mentioned areas. Since there are few books on this specific subject, the editors aim to provide a common platform for researchers working in this area to exhibit their novel findings. The book is intended as a reference work for advanced undergraduates and graduate students, as well as multidisciplinary, interdisciplinary and transdisciplinary research workers and scientists on the subjects of big data and cloud/parallel and distributed computing, and explains didactically many of the core concepts of these approaches for practical applications. It is organized into 24 chapters providing a comprehensive overview of big data analysis using parallel computing and addresses the complete data science workflow in the cloud, as well as dealing with privacy issues and the challenges faced in a data-intensive cloud computing environment. The book explores both fundamental and high-level concepts, and will serve as a manual for those in the industry, while also helping beginners to understand the basic and advanced aspects of big data and cloud computing.

*Cloud Computing* BPB Publications

The existence of the human race has created inevitable effects on our surrounding environment. To prevent further harm to the world's ecosystems, it becomes imperative to assess mankind's impact on and create sustainability initiatives to maintain the world's ecosystems. Environmental Sustainability and Climate Change Adaptation Strategies is a pivotal reference source for the latest scholarly material on the scientific, technical, and socio-economic factors related to climate change assessment. Providing a comprehensive overview of perspectives on sustainability protection of environmental resources, this book is ideally designed for policy makers, professionals, government officials, upper-level students, and academics interested in emerging research on climate change.

*Cloud Computing* IBM Redbooks

The first textbook to teach students how to build data analytic solutions on large data sets using cloud-based technologies. This is the first textbook to teach students how to build data analytic solutions on large data sets (specifically in Internet of Things applications) using cloud-based technologies for data storage, transmission and mashup, and AI techniques to analyze this data. This textbook is designed to train college students to master modern cloud computing systems in operating principles, architecture design, machine learning algorithms, programming models and software tools for big data mining, analytics, and cognitive applications. The book will be suitable for use in one-semester computer science or electrical engineering courses on cloud computing, machine learning, cloud programming, cognitive computing, or big data science. The book will also be very useful as a reference for professionals who want to work in cloud computing and data science. Cloud and Cognitive Computing begins with two introductory chapters on fundamentals of cloud computing, data science, and adaptive computing that lay the foundation for the rest of the book. Subsequent

chapters cover topics including cloud architecture, mashup services, virtual machines, Docker containers, mobile clouds, IoT and AI, inter-cloud mashups, and cloud performance and benchmarks, with a focus on Google's Brain Project, DeepMind, and X-Lab programs, IBKai HwangM SyNapse, Bluemix programs, cognitive initiatives, and neurocomputers. The book then covers machine learning algorithms and cloud programming software tools and application development, applying the tools in machine learning, social media, deep learning, and cognitive applications. All cloud systems are illustrated with big data and cognitive application examples.

**IBM Data Center Networking: Planning for Virtualization and Cloud Computing** Morgan Kaufmann

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

**Mobile Cloud Computing** Elsevier

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

*Mobile Networks and Cloud Computing Convergence for Progressive Services and Applications* CRC Press

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.

**Cloud Computing** CRC Press

Cloud Services, Networking and Management provides a comprehensive overview of the cloud infrastructure and services, as well as their underlying management mechanisms, including data center virtualization and networking, cloud security and reliability, big data analytics, scientific and commercial applications. Special features of the book include: State-of-the-art content Self-contained chapters for readers with specific interests Includes commercial applications on Cloud (video services and games)

*Cloud Computing Applications and Techniques for E-Commerce* Elsevier

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 in Ocean and Atmospheric Sciences* IGI Global

Getting familiar with cloud computing features from scratch to advanced. KEY FEATURES ● Detailed coverage on Cloud fundamentals, Cloud Service Models, and deployment models. ● Easy, detailed, and practical approach to develop skills on working with Cloud Computing. ● Includes charts, diagrams, and graphical illustrations for better visual learning on complex topics of cloud computing. DESCRIPTION Cloud computing is a technology that allows you to store, access data and programs over the internet instead of the hard drive or a server. In this book, you will gain knowledge about the fundamentals of cloud computing. This book includes a detailed description of the features of the cloud, the importance of cloud in today's era, and uses of cloud computing. This book provides you with a deep knowledge of the basics of cloud computing. You will learn about the characteristics, architecture, and uses and importance of cloud computing. This book also explores the concept of scalability and redundancy regarding cloud computing. You will learn about the various cloud deployment and service models. You will also gain knowledge of virtualization technology. You will also have a guided tour of concepts related to cloud management, data storage and security, and cloud operations and technologies. At the end of the book, you will learn about the advanced concepts of cloud computing and also learn about mobile cloud computing. WHAT YOU WILL LEARN ● In-depth understanding on the fundamentals of cloud computing. ● Explore the role and importance of cloud computing across businesses and enterprises. ● Learn about cloud deployment models and service models. ● Gain knowledge on cloud storage, cloud security, administration of cloud

and mobile cloud computing. WHO THIS BOOK IS FOR This book is open to all graduates, beginners and working professionals to help them understand everything about cloud computing and how to operate in a cloud environment. TABLE OF CONTENTS 1. Introduction 2. Architecture and Applications 3. Scalability and Redundancy 4. Cloud Services 5. Cloud Deployment Models 6. Virtualization 7. Management 8. Data Storage and Security 9. Operations and Challenges 10. Technologies and Service Providers 11. Cloud Cube Model 12. Mobile Cloud Computing [Cloud Computing Applications for Quality Health Care Delivery](#) "O'Reilly Media, Inc."

Mastering Cloud Computing Newnes

**Cloud Computing for Machine Learning and Cognitive Applications** CRC Press

Mobile Cloud Computing: Models, Implementation, and Security provides a comprehensive introduction to mobile cloud computing, including key concepts, models, and relevant applications. The book focuses on novel and advanced algorithms, as well as mobile app development. The book begins with an overview of mobile cloud computing concepts, models, and service deployments, as well as specific cloud service models. It continues with the basic mechanisms and principles of mobile computing, as well as virtualization techniques. The book also introduces mobile cloud computing architecture, design, key techniques, and challenges. The second part of the book covers optimizations of data processing and storage in mobile clouds, including performance and green clouds. The crucial optimization algorithm in mobile cloud computing is also explored, along with big data and service computing. Security issues in mobile cloud computing are covered in-depth, including a brief introduction to security and privacy issues and threats, as well as privacy protection techniques in mobile systems. The last part of the book features the integration of service-oriented architecture with mobile cloud computing. It discusses web service specifications related to implementations of mobile cloud computing. The book not only presents critical concepts in mobile cloud systems, but also drives readers to deeper research, through open discussion questions. Practical case studies are also included. Suitable for graduate students and professionals, this book provides a detailed and timely overview of mobile cloud computing for a broad range of readers.

*Risk Thinking for Cloud-Based Application Services* IGI Global

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 [Introduction to Sensors in IoT and Cloud Computing Applications](#) CRC Press

Many enterprises are moving their applications and IT services to the cloud. Better risk management results in fewer operational surprises and failures, greater stakeholder confidence and reduced regulatory concerns; proactive risk management maximizes the likelihood that an enterprise's objectives will be achieved, thereby enabling organizational success. This work methodically considers the risks and opportunities that an enterprise taking their applications or services onto the cloud must consider to obtain the cost reductions and service velocity improvements they desire without suffering the consequences of unacceptable user service quality.

*Cloud Native Infrastructure* Newnes

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

*Mastering Cloud Computing* Information Science Reference

Cloud computing is a method of delivering computing resources. Cloud computing services ranging from data storage and processing to software, such as customer relationship management systems, are now available instantly and on demand. In times of financial and economic hardship, this new low cost of ownership model for computing has gotten lots of attention and is seeing increasing global investment. Generally speaking, cloud computing provides implementation agility, lower capital expenditure, location independence, resource pooling, broad network access, reliability, scalability, elasticity, and ease of maintenance. While in most cases cloud computing can improve security due to ease of management, the provider's lack of knowledge and experience can jeopardize customer environments. This chapter aims to discuss various cloud computing environments and methods to make them more secure for hosting companies and their customers.

*Designing Networks and Services for the Cloud* Cisco Press

As the field of FinTech continues its progress, financial institutions must not only enhance their digitization, but also make serious efforts to understand the resulting new opportunities it creates. In line with these developments, TABF has published the book Basic knowledge on FinTech, which was designed by us as a reference for the FinTech Knowledge Test. Co-authored by TABF staff and other experts, it features balanced and credible analysis, avoiding trivia and overly complex concepts while emphasizing readability. The content structure is based on the World Economic Forum (WEF)'s roadmap for FinTech development, adding in TABF's research findings plus other domestic and international trends and practices. Not only is Basic knowledge on FinTech suitable for financial proficiency testing, but it can also be used as a textbook in university courses, supplementing theoretical knowledge with up-to-date practical knowledge in this rapidly changing field.

*Cloud Technology: Concepts, Methodologies, Tools, and Applications* Mastering Cloud Computing

The enterprise data center has evolved dramatically in recent years. It has moved from a model that placed multiple data centers closer to users to a more centralized dynamic model. The factors influencing this evolution are varied but can mostly be attributed to regulatory, service level improvement, cost savings, and manageability. Multiple legal issues regarding the security of data housed in the data center have placed security requirements at the forefront of data center architecture. As the cost to operate data centers has increased, architectures have moved towards consolidation of servers and applications in order to better utilize assets and reduce "server sprawl." The more diverse and distributed the data center environment becomes, the more manageability becomes an issue. These factors have led to a trend of data center consolidation and resources on demand using technologies such as virtualization, higher WAN bandwidth technologies, and newer management technologies. The intended audience of this book is network architects and network administrators. In this IBM® Redbooks® publication we discuss the following topics: The current state of the data center network The business drivers making the case for change The unique capabilities and network requirements of system platforms The impact of server and storage consolidation on the data center network The functional overview of the main data center network virtualization and consolidation technologies The new data center network design landscape

*Cloud Computing Simplified* Springer

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 recourses 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.

**Distributed and Cloud Computing** "O'Reilly Media, Inc."

Everybody has a supposition on what is a Cloud computing. Cloud computing is a modern area emerged by distributed computing that offers many

powerful benefits to different organizations. It has an ability to rent a server or a thousand of servers via information technology (IT) services whole the world. The capabilities of Cloud computing are obtained by running a geophysical modeling application on most powerful systems. Organizations can improve their efficiency to quickly and reliably respond to the needs of their customers. It is performed by making a contract for various Cloud services such as applications, software, data storages, and processing capabilities. There are some risks in Cloud-based servers such as maintaining the security of systems, asserting the privacy of information, and insuring the wise expenditures of IT resources. Cloud technology causes the dedicated services to be always on, occurring on the running systems to be upgraded, and accordance with demand to be scaled considerably. Cloud computing involves a range of underlying technologies and configuration options instead of being as a single system. Organizations should consider the strengths and weaknesses of the Cloud technology, service models, and deployment methods through evaluating services to meet their requirements. A Cloud system can extremely store and secure large amounts of data that is accessible only by authorized users and applications. It is supported and sponsored by a Cloud service provider which installs a powerful platform on the Cloud systems. The platform involves some of the required abilities such as the operating system, Apache, a MySQL database, Perl, Python, and PHP with a capability for automatically scaling in response to changing the different workloads. Cloud computing can utilize some applications such as sales automation, email, and forum management on the Internet. Internet can protect data while providing a consumer's service as well it is able to utilize the Cloud storage for holding an application, personal data, and business. A Cloud system with the aid of the Internet can use a small number of Web services in order to integrate maps, photos, and GPS information. This book discusses about the main concepts of Cloud computing. It is an appropriate tutorial for ordinary and professional people to acquire some required information about Cloud technology. Chapter 1 introduces the overall and fundamental characteristic of Cloud systems such as Web services, Grid computing, and hardware virtualization. In Chapter 2, the architectures of Cloud computing including the deployment models and the service models defined for Cloud-based servers are described carefully. Chapter 3 explains various applications of Cloud computing in various applications such as file storage, Cloud database, and email. In Chapter 4, some popular consumer applications designed by Cloud-based systems such as Evernote, iCloud, and Spotify are represented completely. Chapter 5 discusses about the different usages of Cloud servers such Cloud monitoring, healthcare, and banking. In Chapter 6, the security issues of Cloud computing such as privacy, reliability, and compliance are presented carefully. Chapter 7 points out the famous simulation tools designed for Cloud-based issues such as CloudSim, Xen hypervisor, and UEC. Finally, Chapter 8 introduces some well-liked companies established for Cloud-based usages such as CloudLock, CloudMunch, and CloudPhysics. I hope that this book can help to ordinary people and professional researchers to design and implement various applications with Cloud technology. Undoubtedly, this book like any humanistic product is not devoid of any problem. Hence, the next version of this book can be published more appropriate than current version according to valuable suggestions of dear readers. I wish that this book can assist to computer science to design complex systems and to solve some of the exiting problems.

*Cloud Services, Networking, and Management* IGI Global

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

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