

Big data and cloud computing – issues and problems

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ABSTRACT

In recent years there has been an increase in the size of Big Data as a result of the growth of social networks, Internet of Things (IoT), business information, etc. A number of problems arise when using Big Data. They can be solved by using Cloud Computing. There are many cloud solutions for processing, analysis and data storage but their application requires taking account of and analyzing characteristics as scalability, parameters concerning the hardware configuration, the system and the application software availability price, etc. A comparative analysis of cloud service providers is made in this article, and guidelines for optimal choice of the provider are defined.

Keywords: cloud computing, private cloud, big data.

INTRODUCTION

In recent years trends of information growth at an increasingly large scale have been observed. The terms terabyte, zeta byte and Big Data are circulating in the public domain more and more often. The reasons for big data growth refer to:

- Accelerated growth of the number of IoT and registration of events from radio frequency identifiers (RFID);
- A huge flow of data from social networks in the Internet;
- Accumulation of large volumes of business information along with maintaining the existing one;
- Data from subscribers of the mobile operators;
- Data from devices for audio and video registration;

- Data on the weather conditions and others.

Along with the big data expansion several problems related to its management arise. Those of greater significance are:

Problems in the storage, processing and analysis of Big data, increase of the complexity and volume of the work and lack of hardware equipment and personnel to carry out the process;

Problems with provision of safe storage and information processing in small and medium-sized companies;

Need for spending funds for the purchase of system and application software

Some of these problems can be solved through the usage of cloud services.

1. Cloud services

Cloud services are characterized by a number of features defined by The National Institute of

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Big Data And Cloud Computing Issues And Problems

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Barik,Harishchandra Dubey,Diptendu
Sinha Roy**

Big Data And Cloud Computing Issues And Problems:

Challenges and Opportunities for the Convergence of IoT, Big Data, and Cloud Computing Velayutham, Sathiyamoorthi, 2021-01-29 In today's market emerging technologies are continually assisting in common workplace practices as companies and organizations search for innovative ways to solve modern issues that arise. Prevalent applications including internet of things, big data, and cloud computing all have noteworthy benefits but issues remain when separately integrating them into the professional practices. Significant research is needed on converging these systems and leveraging each of their advantages in order to find solutions to real-time problems that still exist. Challenges and Opportunities for the Convergence of IoT, Big Data, and Cloud Computing is a pivotal reference source that provides vital research on the relation between these technologies and the impact they collectively have in solving real-world challenges. While highlighting topics such as cloud-based analytics, intelligent algorithms, and information security, this publication explores current issues that remain when attempting to implement these systems, as well as the specific applications. IoT, big data, and cloud computing have in various professional sectors. This book is ideally designed for academicians, researchers, developers, computer scientists, IT professionals, practitioners, scholars, students, and engineers seeking research on the integration of emerging technologies to solve modern societal issues. *Emerging Trends in Cloud Computing Analytics, Scalability, and Service Models* Darwish, Dina, 2024-01-25 Academic scholars and industry professionals alike face the formidable challenge of staying informed about emerging trends and innovations in cloud computing. The expansive realm of cloud technology has been the catalyst for several transformative changes across industries, offering unparalleled opportunities for optimization and innovation. However, even seasoned experts may find themselves daunted by the intricate web of new technologies, including green cloud computing, edge computing, cryptography in the cloud, load balancing strategies, and cloud analytics insights. *Emerging Trends in Cloud Computing Analytics, Scalability, and Service Models* provides academic scholars and industry professionals with a comprehensive exploration of these critical cloud computing topics and more. This invaluable resource provides clarity and insight, serving as a guiding beacon in the ever-evolving world of cloud technology. Whether you're seeking to understand the intricacies of cloud security solutions, the nuances of scalability in cloud computing, or the various service models in the cloud, this book empowers you to navigate this dynamic field with confidence and expertise.

Big Data, Cloud Computing, and Data Science Engineering Roger Lee, 2023-03-12 This book presents scientific results of the 7th IEEE ACIS International Conference on Big Data, Cloud Computing, Data Science Engineering (BCD 2021) which was held on August 4-6, 2022 in Danang, Vietnam. The aim of this conference was to bring together researchers and scientists, businessmen and entrepreneurs, teachers, engineers, computer users, and students to discuss the numerous fields of computer science and to share their experiences and exchange new ideas and information in a meaningful way. All aspects, theory, applications, and tools of computer and information science, the practical challenges encountered along the way, and

the solutions adopted to solve them are all explored here in the results of the articles featured in this book The conference organizers selected the best papers from those papers accepted for presentation at the conference The papers were chosen based on review scores submitted by members of the program committee and underwent further rigorous rounds of review From this second round of review 15 of the conference s most promising papers are then published in this Springer SCI book and not the conference proceedings We impatiently await the important contributions that we know these authors will bring to the field of computer and information science

Research Anthology on Architectures, Frameworks, and Integration Strategies for Distributed and Cloud Computing Management Association, Information Resources,2021-01-25 Distributed systems intertwine with our everyday lives The benefits and current shortcomings of the underpinning technologies are experienced by a wide range of people and their smart devices With the rise of large scale IoT and similar distributed systems cloud bursting technologies and partial outsourcing solutions private entities are encouraged to increase their efficiency and offer unparalleled availability and reliability to their users The Research Anthology on Architectures Frameworks and Integration Strategies for Distributed and Cloud Computing is a vital reference source that provides valuable insight into current and emergent research occurring within the field of distributed computing It also presents architectures and service frameworks to achieve highly integrated distributed systems and solutions to integration and efficient management challenges faced by current and future distributed systems Highlighting a range of topics such as data sharing wireless sensor networks and scalability this multi volume book is ideally designed for system administrators integrators designers developers researchers academicians and students

Integration of Cloud Computing with Emerging Technologies Sapna Sinha,Vishal Bhatnagar,Prateek Agrawal,Vikram Bali,2023-10-30 This book gives a complete overview of cloud computing its importance its trends innovations and its amalgamation with other technologies Key Features In depth explanation of emerging technologies utilizing cloud computing Supplemented with visuals flow charts and diagrams Real time examples included Caters to beginners as well as advanced researchers by explaining implications innovations issues and challenges of cloud computing Highlights the need for cloud computing and the true benefits derived by its application and integration in emerging technologies Simple easy language

Big Data Processing Using Spark in Cloud Mamta Mittal,Valentina E. Balas,Lalit Mohan Goyal,Raghvendra Kumar,2018-06-16 The book describes the emergence of big data technologies and the role of Spark in the entire big data stack It compares Spark and Hadoop and identifies the shortcomings of Hadoop that have been overcome by Spark The book mainly focuses on the in depth architecture of Spark and our understanding of Spark RDDs and how RDD complements big data s immutable nature and solves it with lazy evaluation cacheable and type inference It also addresses advanced topics in Spark starting with the basics of Scala and the core Spark framework and exploring Spark data frames machine learning using Mllib graph analytics using Graph X and real time processing with Apache Kafka AWS Kinesis and Azure Event Hub It then goes on to investigate Spark using PySpark

and R Focusing on the current big data stack the book examines the interaction with current big data tools with Spark being the core processing layer for all types of data The book is intended for data engineers and scientists working on massive datasets and big data technologies in the cloud In addition to industry professionals it is helpful for aspiring data processing professionals and students working in big data processing and cloud computing environments *16th International Conference on Information Technology-New Generations (ITNG 2019)* Shahram Latifi,2019-05-22 This 16th International Conference on Information Technology New Generations ITNG continues an annual event focusing on state of the art technologies pertaining to digital information and communications The applications of advanced information technology to such domains as astronomy biology education geosciences security and health care are among topics of relevance to ITNG Visionary ideas theoretical and experimental results as well as prototypes designs and tools that help the information readily flow to the user are of special interest Machine Learning Robotics High Performance Computing and Innovative Methods of Computing are examples of related topics The conference features keynote speakers the best student award poster award service award a technical open panel and workshops exhibits from industry government and academia Security and Privacy Trends in Cloud Computing and Big Data Muhammad Imran Tariq,Valentina Emilia Balas,Shahzadi Tayyaba,2022-06-07 It is essential for an organization to know before involving themselves in cloud computing and big data what are the key security requirements for applications and data processing Big data and cloud computing are integrated together in practice Cloud computing offers massive storage high computation power and distributed capability to support processing of big data In such an integrated environment the security and privacy concerns involved in both technologies become combined This book discusses these security and privacy issues in detail and provides necessary insights into cloud computing and big data integration It will be useful in enhancing the body of knowledge concerning innovative technologies offered by the research community in the area of cloud computing and big data Readers can get a better understanding of the basics of cloud computing big data and security mitigation techniques to deal with current challenges as well as future research opportunities Predictive Policing in Germany. Opportunities and challenges of data-analytical forecasting technology in order to prevent crime Vanessa Bauer,2020-01-08 Master s Thesis from the year 2019 in the subject Computer Science Theory grade A Management Center Innsbruck language English abstract This Master Thesis introduces theoretical fundamentals of Predictive Policing tools used in German police institutions such as Hot Spot techniques Near Repeat approaches Risk terrain Analysis and Concentric Zone Model In times of Big Data police work has also changed and the usage of forecasting technologies in order to prevent crime does not only vary state wide in definitions but also in its application Therefore objectives and appliances are described in general Additionally a chronological transformation is established in order to compare lineages in Germany with those in the USA Since Predictive Policing polarises the research question deals with potential opportunities and challenges police institutions and the society have to deal with when it comes

to leveraging data analytical forecasting technologies in order to prevent crime The motivation for writing the Master Thesis about the present topic stems from the fact that it is highly current and has not yet been thoroughly studied Preventing crime and thus ensuring a safe environment is an important field of research in our society and should be guaranteed with problem oriented policing Since there are varying considerations and application measures of PP according to different country side frameworks the Thesis provides an overview about technical functioning and practical appliance within Germany Therefore content provides on the one hand added value for lecturers and students in the field of Public Security Management and related studies or police officers in the upper grade of the civil service On the other hand it serves to educate citizens about how far the technologies have progressed in this area and to what extent this will influence the lives of citizens in the future Many police departments worldwide test software based forecasting technologies according to their relevance in practice Forecasting systems work with data sets about already registered crime activities Those datasets are then complemented with socio spatial calendar and meteorological data Since the amount of collected and analyzed data increases day by day the question arises as to what extent Machine Learning and Artificial Intelligence will influence the human advice origin to predict and prevent crime

Data Management in the Cloud Divyakant Agrawal,Sudipto Das,Amr El Abbadi,2022-05-31

Cloud computing has emerged as a successful paradigm of service oriented computing and has revolutionized the way computing infrastructure is used This success has seen a proliferation in the number of applications that are being deployed in various cloud platforms There has also been an increase in the scale of the data generated as well as consumed by such applications Scalable database management systems form a critical part of the cloud infrastructure The attempt to address the challenges posed by the management of big data has led to a plethora of systems This book aims to clarify some of the important concepts in the design space of scalable data management in cloud computing infrastructures Some of the questions that this book aims to answer are the appropriate systems for a specific set of application requirements the research challenges in data management for the cloud and what is novel in the cloud for database researchers We also aim to address one basic question whether cloud computing poses new challenges in scalable data management or it is just a reincarnation of old problems We provide a comprehensive background study of state of the art systems for scalable data management and analysis We also identify important aspects in the design of different systems and the applicability and scope of these systems A thorough understanding of current solutions and a precise characterization of the design space are essential for clearing the cloudy skies of data management and ensuring the success of DBMSs in the cloud thus emulating the success enjoyed by relational databases in traditional enterprise settings Table of Contents Introduction Distributed Data Management Cloud Data Management Early Trends Transactions on Co located Data Transactions on Distributed Data Multi tenant Database Systems Concluding Remarks

Synergistic Interaction of Big Data with Cloud Computing for

Industry 4. 0 Sheetal S. Zalte-Gaikwad,Indranath Chatterjee,Rajanish K. Kamat,2022-11 The goal of this book is to help

aspiring readers and researchers understand the convergence of Big Data with the Cloud This book presents the latest information on the adaptation and implementation of Big Data technologies in various cloud domains and Industry 4 0 Synergistic Interaction of Big Data with Cloud Computing for Industry 4 0 discusses how to develop adaptive robust scalable and reliable applications used in solutions for day to day problems It reviews the advantages and consequences of utilizing Cloud Computing to tackle Big Data issues within the manufacturing and production sector as part of Industry 4 0 Top Big Data experts throughout the world have contributed their expertise to this book addressing the major challenges issues and advances in Big Data and Cloud Computing for Industry 4 0 By exploring the basic and high level concepts this book serves as a guide for those in the industry while also helping beginners and the more advanced in understanding both the basic and the advanced aspects of the synergistic Interaction of Big Data and Cloud Computing

Computer and Information Technology Prasad Yarlagadda,Seung Bok Choi,Yun Hae Kim,2014-02-06 Selected peer reviewed papers from the International Forum on Computer and Information Technology IFCIT 2013 December 24 25 2013 Shenzhen China *Cloud Essentials* Kalani Kirk Hausman,Susan L. Cook,Telmo Sampaio,2013-06-04 Covers the essential concept of cloud computing and offers details on the exam objectives for two leading cloud certification exams **Alibaba's Reflective Strategic Plan to Navigate Regulatory Challenges** Joeleen Kimbell,2025-02-18 Case Study from the year 2023 in the subject Business economics Business Management Corporate Governance grade A language English abstract Alibaba one of China s leading e commerce and technology firms faces increasing regulatory scrutiny from Chinese authorities particularly concerning anti monopolistic practices data security and market competition This strategic challenge necessitates a comprehensive and adaptive response to ensure compliance maintain Alibaba s market dominance and uphold its reputation The regulatory landscape in China has evolved significantly with new laws such as the Anti Monopoly Law AML and Data Security Law directly impacting Alibaba s operations Authorities have imposed substantial fines and restrictions requiring the company to reassess its business strategies Ensuring compliance with these evolving regulations is critical to maintaining trust among stakeholders avoiding financial penalties and securing long term sustainability In response to these challenges Alibaba s strategic plan focuses on reinforcing its internal regulatory frameworks restructuring financial services and ensuring fair competition on its platforms Transparent communication with investors employees and customers is a key priority to maintain confidence and trust in the company s future Ethical considerations also play a crucial role with an emphasis on strengthening data protection policies fostering responsible restructuring practices and maintaining high ethical standards across its operations Despite these efforts the strategic plan acknowledges potential limitations including the dynamic nature of regulatory changes complexities arising from Alibaba s global operations and the risk of stifling innovation due to increased compliance requirements Addressing these concerns requires a flexible regulatory strategy a balanced approach to maintaining Alibaba s innovative corporate culture and continuous engagement with regulatory authorities to adapt to new

requirements Ultimately Alibaba s ability to integrate compliance measures within its corporate structure while preserving its entrepreneurial agility will be critical in navigating regulatory challenges and sustaining its leadership in China s digital economy

Cloud Computing for Geospatial Big Data Analytics Himansu Das,Rabindra K. Barik,Harishchandra Dubey,Diptendu Sinha Roy,2018-12-11 This book introduces the latest research findings in cloud edge fog and mist computing and their applications in various fields using geospatial data It solves a number of problems of cloud computing and big data such as scheduling security issues using different techniques which researchers from industry and academia have been attempting to solve in virtual environments Some of these problems are of an intractable nature and so efficient technologies like fog edge and mist computing play an important role in addressing these issues By exploring emerging advances in cloud computing and big data analytics and their engineering applications the book enables researchers to understand the mechanisms needed to implement cloud edge fog and mist computing in their own endeavours and motivates them to examine their own research findings and developments

Geographic Information Science and Systems Paul A. Longley,Michael F. Goodchild,David J. Maguire,David W. Rhind,2015-03-12 Effective use of today s vast geographic information GI resources requires more than just powerful technology for problem solving It requires science to help us understand the way the world works and to help us devise effective procedures for making decisions Three previous editions have established this text as a defining multidisciplinary treatment of the scientific principles that underpin the use of geographic information technologies for problem solving This extensively revised and updated edition provides a guide to the enduring scientific principles and information systems that support effective use of today s GI It also provides a primer on essential methods for analysis of GI and the ways in which effective management of GI informs policy and action

Tokenization of Private Equity Funds in Germany. Direct and Indirect Participation and Feasibility Philipp Rothe,2023-05-24 Master s Thesis from the year 2023 in the subject Business economics Investment and Finance grade 1 0 International School Of Management Campus Frankfurt language English abstract The aim of the master thesis is to examine whether private equity is suitable for tokenization After analyzing different characteristics of private equity such as the illiquidity or mechanisms like capital calls the master thesis concluded that the asset class is suitable Private equity shares in the form of security tokens can help to reduce illiquidity and cashflows like the capital calls can be automated by the use of smart contracts For the tokenization the master thesis recommends to use existing standards such as the Ethereum blockchain or the ERC 1400 token Furthermore different structures for issuing private equity tokens were elaborated These include a structure for an indirect participation via a special purpose vehicle which issues tokens and simultaneously invests into a fund but also a direct participation where the fund itself can issue tokens During the description of possible structures all relevant laws were included These include the German Electronic Securities Act eWpG German Banking Act KWG Security Prospectus Act WpPG Capital Investment Act VermAnlG Securities Trading Act WpHG and the German Investment

Code KAGB All structures were evaluated from the perspective of private equity funds institutional investors private investors or other relevant intermediaries Also benefits and challenges for the different structures and participants were discussed The benefits include an increase in efficiency of several processes potential cost savings the possibility for funds to reach more investors or the possibility for investors to diversify their portfolio more Still these benefits could only be made use of if major challenges are mastered by the market participants These include an insufficient legal framework different hurdles when implementing a secondary market or the problem that theoretical approaches might work differently in reality

Modern Technologies in Materials, Mechanics and Intelligent Systems X.Y. Huang,X.B. Zhu,K.L. Xu,J.H. Wu,2014-10-10 Selected peer reviewed papers from the 2014 4th International Conference on Intelligent System and Applied Material GSAM 2014 August 23 24 2014 Taiyuan China A Secured Architecture for Mitigating Distributed Denial of Service Attack Integrating Internet of Things and Cloud Computing Helen Parimala,2023-01-09 Doctoral Thesis Dissertation from the year 2019 in the subject Computer Science IT Security grade 87 % Bharathidasan University language English abstract Internet of Things IoT and Cloud Computing play a vital role in the field of Information Technology The goal of IoT is to link objects of heterogeneous in nature to avail smart services and application anywhere anytime using any device Cloud Computing allows computer users to conveniently rent access to fully featured applications to software development and deployment environments and to computing infrastructure assets such as network accessible data storage and processing with its salient features of on demand self service broad network access resource pooling rapid elasticity and measured service Though the Cloud and IoT have emerged as independent technology merging these two technologies brings renaissance in the field of future networks and in building smart environment This new evolvment is known as CloudIoT One of the important challenges in CloudIoT is security Challenges on the integration of the Cloud within IoT are to be a major bottleneck The integration of security mechanism and data privacy are also a major concern Any leakage of information from any of the CloudIoT could severely damage the privacy and authenticity of the users and data Researchers all over the world put on efforts in integrating smart CloudIoT services to satisfy the needs of the CloudIoT Users But no prominent architecture has been authenticated so far Hence it is imperative to design architecture to integrate CloudIoT smart services and applications to access smart services in a secured manner at anywhere anytime The major challenges in implementing this scenario are security factors such as authenticity confidentiality integrity and privacy In network security there are several types of attacks which can harm the network resources and services Distributed Denial of Service DDoS is one of the malicious attacks which can harm data communication in CoT potentially There is a problem that may render customers to withdraw from the cloud services A traditional DDoS attack aims at servers and or the bandwidth of a network or a website in order to make them unavailable to their intended users However attackers can generate DDoS attack to harm the cloud resources in the same way as the cloud has a huge pool of resources which are larger than attackers resources Digital Manufacturing

& Automation III Yong Hong Tan,2012-07-26 Selected peer reviewed papers from the 3rd International Conference on Digital Manufacturing Automation ICDMA 2012 August 1 2 2012 Guangxi China

This book delves into Big Data And Cloud Computing Issues And Problems. Big Data And Cloud Computing Issues And Problems is a vital topic that must be grasped by everyone, ranging from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Big Data And Cloud Computing Issues And Problems, encompassing both the fundamentals and more intricate discussions.

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 6. In chapter 5, this book will draw a conclusion about Big Data And Cloud Computing Issues And Problems. This chapter will summarize the key points that have been discussed throughout the book.
- This book is crafted in an easy-to-understand language and is complemented by engaging illustrations. It is highly recommended for anyone seeking to gain a comprehensive understanding of Big Data And Cloud Computing Issues And Problems.

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Big Data And Cloud Computing Issues And Problems Introduction

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