



Chapter 13

Cloud Analytics: Introduction, Tools, Applications, Challenges, and Future Trends

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ABSTRACT

Cloud analytics is the process of using cloud computing resources and technologies to analyze and gain insights from large and complex data. Cloud analytics has become increasingly popular in recent years due to its scalability, cost-efficiency, and accessibility. It enables organizations to process large datasets, perform complex analytics, and make data-driven decisions more effectively and affordably. This book chapter provides a comprehensive overview of cloud analytics, covering its fundamental principles, significance in today's data-driven landscape, benefits and challenges of adoption, critical tools and technologies, data management in cloud environments, and promising future directions and emerging trends. By the end of this chapter, readers will have a deep understanding of cloud analytics and its potential to revolutionize the way organizations analyze and leverage data.

DOI: 10.4018/979-8-3693-0900-1.ch013

Emerging Trends in Cloud Computing Analytics, Scalability, and Service Models

INTRODUCTION

Cloud analytics is a framework for using cloud technologies to store, process and analyze large and complex data (Achar et al., 2015). Cloud analytics provides fast and efficient data processing, enables real-time analysis, and ensures data security. Its popularity is growing due to its many advantages, including significantly enhancing production quality (Ajah, I.A. et al., 2019).

In the present age, Cloud analytics has many applications, including data warehousing, big data technologies, data visualization, business intelligence, data security, serverless computing, and more. (Ruiz et al., 2021). At the core of cloud analytics are fundamental services that enable organizations to control the full potential of cloud computing resources and advanced analytics tools for efficient data insight extraction. These principles encompass the following critical components.

- Scalability empowers organizations to allocate resources as needed without substantial upfront investments.
- The cost-efficient pay-as-you-go model ensures organizations only pay for actively used resources, enhancing cost-effectiveness.
- Accessibility is another foundation, allowing users to access cloud analytics solutions from anywhere with an internet connection, facilitating remote collaboration
- Cloud providers guarantee speed and performance with robust infrastructure and advanced processing capabilities.
- Streamlined data integration simplifies data collection, which is necessary for applications requiring immediate insights.
- Predictive analytics, data visualization and business intelligence tools improve decision-making.
- Easy maintenance and disaster recovery capabilities enhance the effectiveness of cloud analytics, allowing organizations to excel in their operations and maintain a competitive edge.

Cloud analytics presents a transformative solution in the present data-driven landscape, where data plays a central role in decision-making and gaining a competitive edge. (Henke et al., 2016). It helps to efficiently collect, process, and analyse data, empowering organizations to make real-time, data-driven decisions (Niu, Y, et al., 2021). In addition, the scalability and cost-effectiveness of Cloud Analytics make it accessible to businesses of all sizes, democratizing data analytics. Cloud Analytics enables organizations to adapt to dynamic market conditions, gain deeper insights into their operations, and enhance competitiveness. With data security and easy maintenance, it offers a secure and low-maintenance solution for data analytics (Ranjan et al., 2021). In a world where data is generated at an unprecedented rate, cloud analytics is essential for harnessing data for strategic and operational advantages.

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