Chapter 12
Advanced Digital Data Processing Using Cloud Cryptography:
Industrial Applications

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ABSTRACT

Cloud computing uses the internet instead of discs or memory. Computing services include servers, databases, networks, and programmes. The primary benefit of cloud computing is easy and cheap data backup and access from anywhere. Cloud storage doesn't store consumer data, raising safety concerns. Cloud backup and storage users may not know how data is transported. The user is unaware a third party is secretly accessing their data. For safety, we offer numerous encryption algorithms. This book chapter covered cryptography and cloud computing.

DOI: 10.4018/979-8-3693-1335-0.ch012

1. INTRODUCTION

By reorganizing a large number of resources and making them accessible to consumers in accordance with the criteria defined by the customers (Saxena, A. et al., 2021), the model of cloud computing brings in an entirely new way for the delivery of services. The cloud computing model (Anand, R. et al., 2023) makes this new technique possible (M. A. Vouk, et al. (2008)). The introduction of cloud computing also marks the start of an entirely new era in the annals of computer history. The concept that drives cloud computing is analogous, in its most generic form, to that of a virtualized software programmer (Kirubasri, G. et al., 2022). In addition to this, it is an essential component of the investigation and development of the cellular networks (Kirubasri, G. et al., 2021) and services of the next generation, which makes it an essential component of the entire picture (P. S. Wooley, et al. (2011)).

This is because it is an essential aspect of the investigation and development of the next generation of cellular networks and services (Anand, R. et al., 2022). One of the most essential aspects of cloud computing is the practice of storing customers' data on the cloud rather than on their local devices. This helps customers significantly cut down on the amount of data (Kumar, M. S. et al., 2021) they need to store and gives them easier access to their data (Pandey, B. K. et al., 2024). Because of cloud computing, it is no longer necessary for a user to install software on their local computer system in order to access a service that is supplied via the internet and made available through cloud computing. This is because cloud computing eliminates the need for such software installations. The use of cloud computing enables the availability of this capability. Users, both individually and collectively in the form of organisations, are eligible to take advantage of this benefit. The most significant benefits of utilising this technology include the relatively low cost of utilising it, increased storage capacity, and numerous application opportunities that are given by cloud computing.

The use of cloud computing also offers However, the most significant risk that cloud computing poses is to the users' safety and privacy (Pramanik, S. et al., 2023), and most industry experts agree that this is becoming a key obstacle that prevents cloud computing from reaching its full potential (i.e., by storing sensitive data on a server that is owned by someone else and located in an unknown location). Cloud computing has the potential to revolutionize many industries, but it has yet to reach its full potential because of this risk. Computing in the cloud has the potential to change many different industries, but because of the risk involved, it has not yet reached its full potential (S. Subashini et al. (2011)). Cloud computing has the potential to transform many different businesses, but because of the risk involved, it has not yet realized its full potential. Cloud computing has the potential to change many different industries (David, S. et al., 2023). The phrase "safety in the cloud" refers to the infrastructure and processes that are necessary to safeguard cloud computing services and commodities against the danger of being compromised by cybercriminals. This is important since cloud computing services and commodities are becoming increasingly popular. The fact that cloud computing services and items are kept in off-site locations introduces this potential safety concern. In this context, the fact that cloud computing services and items are stored in remote locations offers a possible security risk (Pandey, J. K. et al., 2022).

As a direct result of this reality, a substantial amount of cryptography is applied in cloud computing in order to secure (Pandey, B. K. et al., 2021) the validity, integrity, and secrecy of the information that is kept there. This is done in order to keep sensitive data (Khan, B. et al., 2021) from falling into the wrong hands. Encryption ensures that this objective can be accomplished with success. However, the solutions that are now being investigated are not only inadequate, but they are also inefficient. As a consequence of this, it is not possible to put any of these ideas into action because they do not satisfy