

Application of the ROCCA Method in Designing and Developing Private Cloud Storage at PT. Cipta Inovasi Teknologi

Stephani Trivena

Universitas Catur Insan Cendekia, Indonesia

Email: stephanitrivena@journals.ai-mrc.com

Abstract

Cloud computing represents a significant advancement in technology that can be effectively applied in the business sector to accelerate business processes and substantially reduce operational costs. PT. Cipta Inovasi Teknologi is one such company that has leveraged cloud computing through Nextcloud software. However, its daily operational activities continue to face several challenges, such as database merging on the parent server, data loss, and suboptimal data integration processes between divisions. These issues arise due to cloud computing access being restricted to the company's internal internet network, hindering the exchange of information between divisions and leading to inefficient decision-making. To address these challenges, a comprehensive cloud computing design using the ROCCA (Roadmap for Cloud Computing Adoption) method is necessary. This method provides a structured workflow and clear stages in the design process. The resulting design will be developed into a prototype for use by internal company parties to facilitate data integration. The study's findings indicate that the application of the ROCCA method effectively enhances the efficiency of personal data storage systems, improves data security, facilitates data access and sharing across divisions, and minimizes the risk of data loss.

Keywords: Cloud Computing, Virtualization, Nextcloud, ROCCA, Data Integration

INTRODUCTION

Cloud computing is a significant technological advancement that provides numerous benefits to the business sector, primarily enhancing the efficiency of business processes and reducing operational costs (Ahmad, & Gani, 2019). This technology enables companies to access and manage data, applications, and other computing resources over the internet, rather than relying on local servers or personal devices (Božić, & Batko, 2019). As a result, it has transformed how organizations operate, offering flexibility, scalability, and cost-efficiency that traditional IT infrastructures cannot easily match.

PT. Cipta Inovasi Teknologi is one such company that has adopted cloud computing technology to improve its business operations. By leveraging the Nextcloud software, the company aims to manage data storage, collaboration, and information sharing effectively within its network (Chandrasekaran, & Eswaran, 2020). Nextcloud, an open-source cloud software solution, allows the company to maintain control over its data while benefiting from the flexibility and scalability that cloud computing offers. However, despite these benefits, the company still faces operational challenges that hinder optimal performance.

One of the main issues experienced by PT. Cipta Inovasi Teknologi is related to database management on the primary server. Data mixing and inconsistency occur frequently, which poses a risk to data integrity and security. Additionally, there have been instances of data loss, which not only disrupts business continuity but also undermines trust in the cloud system's reliability. Another

significant problem is the suboptimal data integration process between different divisions of the company. This inefficiency arises partly from the complexity of managing multiple data sources and partly from limited access to cloud services within the organization's internal network.

Access to cloud computing in PT. Cipta Inovasi Teknologi is confined to the company's internal internet network, which creates a bottleneck in data exchange between various divisions. When cloud access is restricted in this way, it impedes the seamless flow of information necessary for informed decision-making. The resulting information silos not only delay internal communication but also contribute to making decisions that may not be based on complete or up-to-date information, adversely affecting the company's agility and responsiveness to market changes.

To address these challenges, there is a need for a more efficient cloud computing design that promotes effective data management, integration, and security. One potential solution is to implement the ROCCA (Roadmap for Cloud Computing Adoption) method. ROCCA offers a structured framework to guide organizations through the cloud adoption process, ensuring that the transition is efficient and aligned with the company's strategic goals. This method focuses on assessing business needs, designing an appropriate cloud infrastructure, and setting a clear pathway for integrating cloud services into daily operations.

By applying the ROCCA method, PT. Cipta Inovasi Teknologi can develop a tailored cloud computing solution that resolves existing operational inefficiencies and fosters a more dynamic data integration process. Such a solution would allow for improved data exchange across divisions, better data security, and a more comprehensive approach to decision-making. The structured workflow facilitated by ROCCA also ensures that the cloud system remains adaptable to future changes and growth in business needs, thereby providing long-term benefits.

In conclusion, the implementation of cloud computing, despite its challenges, holds great potential for improving business operations when designed and managed properly. The challenges faced by PT. Cipta Inovasi Teknologi underscore the importance of structured cloud adoption strategies, such as ROCCA, which can help overcome issues related to data integration, access, and management. With a well-designed cloud framework, businesses can achieve greater efficiency, security, and flexibility in their operations.

METHODS

This study employs the ROCCA method, which offers a structured approach to the cloud computing design process. The ROCCA method is selected due to its ability to provide a clear and efficient framework for developing a cloud-based data storage system. It emphasizes a systematic pathway to ensure the successful adoption and implementation of cloud technologies within a company's infrastructure (Koo, & Cho, 2017). The prototype of the cloud computing system designed using the ROCCA methodology will be implemented within the internal structure of PT. Cipta Inovasi Teknologi, aiming to facilitate the integration of data between various divisions of the company.

The stages involved in applying the ROCCA method include analyzing the company's specific needs, designing the data storage system tailored to these requirements, implementing the prototype within the operational environment, and finally evaluating the effectiveness of the developed system. Each step is meticulously planned to ensure that the cloud computing system not only meets the current data integration requirements but also allows for scalability and efficiency in handling data across different divisions. Through this approach, the study aims to demonstrate that

the ROCCA method can effectively streamline the cloud adoption process, enhancing both the efficiency and functionality of the company's data management system.

RESULTS

The results of the study demonstrate that applying the ROCCA method in cloud computing design has a positive impact on the efficiency of data storage and internal data management within the company. The developed system significantly enhances data security, ensuring that sensitive information is protected and securely managed. It also facilitates easy access and sharing of data between divisions, streamlining internal communication and data flow. Moreover, the risk of data loss is greatly reduced due to the robust data backup and storage mechanisms integrated into the cloud system.

Furthermore, the implementation of the ROCCA method has led to improved optimization in the integration of data between various divisions. Previously, the restricted access to cloud computing, which was limited to the company's internal internet network, created obstacles in efficient data exchange. With the new system in place, these limitations are effectively eliminated, allowing seamless data access regardless of network constraints. As a result, divisions within the company can collaborate more efficiently, share information in real-time, and make informed decisions based on accurate, up-to-date data.

In addition, the transition to a more open cloud access model has enhanced operational flexibility and efficiency. By breaking down the silos that previously hindered inter-divisional data sharing, the company has achieved greater data coherence and integration, resulting in more streamlined business processes. The ROCCA-based cloud system ensures that data is easily accessible, securely stored, and effectively managed across all divisions, ultimately contributing to better decision-making and overall operational performance.

DISCUSSION

The application of the ROCCA method in the development of a cloud computing system based on Nextcloud has proven to be effective in addressing the challenges of data integration and security faced by PT. Cipta Inovasi Teknologi. This structured approach has enabled the company to overcome complex issues regarding the synchronization of data across various departments and the safeguarding of sensitive information. The ROCCA method's structured guidelines have contributed to an efficient workflow for data management, making the system more cohesive and secure. Moreover, the methodology has facilitated smoother collaboration among different divisions within the company, promoting a unified and secure approach to data sharing.

The ROCCA method has also supported the company in managing its data more efficiently and in a more organized manner. By structuring the data storage and access process, the company has gained better control over its information flow, significantly reducing redundancies and improving overall data quality. As a result, the enhanced data structure enables better tracking and retrieval, which is crucial for operations requiring real-time data access and analysis. Additionally, the structured data storage enhances compliance with security standards, ensuring that confidential business information is handled according to best practices in cloud computing.

Another significant benefit of using the ROCCA method is the improvement in decision-making processes. With a more efficient and structured system, access to accurate and real-time data becomes simpler and more reliable (Thakur, & Nandi, 2018). This availability of timely information ensures that decisions are made based on up-to-date insights, reducing the chances of errors or

delays due to data inconsistencies. Such improvements in data reliability are critical for maintaining the company's competitiveness and responsiveness to market changes, as they ensure that the decision-making process is both swift and informed.

Further discussions are necessary to explore the potential for future system developments and to evaluate the broader implications of applying cloud computing through the ROCCA method in various business organizations. While the current implementation at PT. Cipta Inovasi Teknologi has yielded promising results, there is a need to assess how these practices can be adapted or scaled to suit different types and sizes of organizations. It is also important to consider the industry-specific requirements that might influence how cloud systems are designed and managed, as certain sectors may have unique demands concerning data security, compliance, and accessibility.

Additionally, evaluating the ROCCA method's application in different business contexts could uncover opportunities for enhancing the framework itself. The experiences and feedback from different implementations may provide valuable insights into how the method can be refined or adjusted to cater to evolving technological landscapes and organizational needs. These insights can contribute to creating a more versatile framework that benefits not only companies like PT. Cipta Inovasi Teknologi but also a wider range of organizations seeking efficient cloud computing solutions.

In conclusion, the implementation of the ROCCA method in developing a cloud computing system with Nextcloud at its core has greatly improved data integration and security for PT. Cipta Inovasi Teknologi. The structured approach to managing data has not only optimized internal processes but also laid the groundwork for more informed and timely decision-making. However, continued exploration and analysis are recommended to fully understand the adaptability of the ROCCA method to other business models and sectors, ensuring that the benefits of efficient cloud adoption can be realized across diverse organizational settings.

CONCLUSION

The implementation of the ROCCA method in the design of a cloud computing system based on Nextcloud has significantly enhanced the efficiency of data storage, security, and integration across divisions within PT. Cipta Inovasi Teknologi. The structured approach provided by ROCCA ensures that data is not only stored efficiently but also remains secure and readily accessible to authorized personnel across different departments. By streamlining data storage processes and improving inter-divisional data exchange, the company can now handle its information more effectively, thereby reducing data silos and promoting better collaboration and operational performance. This improved system architecture also reduces the risk of data loss and enhances overall data management practices, making daily business operations smoother and more reliable.

The success of this implementation serves as a model for other companies aiming to optimize their data management systems. The principles behind the ROCCA method and its structured approach to cloud computing design offer a replicable framework for businesses of varying sizes and industries. Other organizations seeking to enhance their data storage capabilities, secure sensitive information, and improve data integration across departments can benefit from adopting a similar approach. The method not only fosters a more robust and scalable data management system but also aligns with the goal of creating a secure, centralized, and easily accessible cloud-based infrastructure, which is essential in today's increasingly data-driven business environment.

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