Yogesh Kalapala, 1001879640
CSE - 6324 - 003
Paper Critique - 2
3/6/2023

Blockchain-Enabled Reengineering of Cloud Datacenters

Authors: Keke Gai, Kim-Kwang Raymond Choo, Liehuang Zhu

Abstract:

The paper proposes a conceptual model for fusing blockchains and cloud computing to create additional value. The authors also discuss the potential benefits of this fusion and identify some operational challenges that need to be addressed. The aim is to reengineer cloud datacenters using blockchains to achieve secure data transfer and transparent data usage. Future research directions are also outlined.

Problem Statement:

Reengineering in cloud datacenters may be necessary to address operational challenges that arise in centralized settings, such as the lack of control over user data and data being stored in multiple places. Additionally, user-data-related concerns persist in extended or integrated cloud systems. By reengineering cloud datacenters using blockchains, secure data transfer and transparent data usage can be achieved, potentially addressing these challenges and concerns.

Significance:

The authors present a compelling argument for the potential benefits of merging blockchains and cloud computing in reengineering cloud datacenters. Authors provide a well-presented rationale for their research and explain the challenges related to cloud datacenters clearly. Additionally, the proposed model for integrating blockchains and cloud computing is well-organized and explained in detail. The model's strength lies in its capacity to offer various deployment modes that can be customized to cater to different organizations' specific requirements.

Central Idea:

The cloud datacenters present various difficulties, including governance concerns, payment management, service downtime, and challenges with multi cloud integration. The authors, however, focused specifically on security and privacy concerns. Furthermore, cloud service providers may face security breaches or other forms of compromise, prompting efforts to encrypt user data to minimize damage while optimizing utility. Fully homomorphic encryption (FHE) is one such solution that has been proposed.

Methodology or Process:

The authors presents a compelling argument for the potential benefits of merging blockchains and cloud computing in reengineering cloud datacenters. Authors provide a well-presented rationale for their research and explain the challenges related to cloud datacenters clearly. Additionally, the proposed model for integrating blockchains and cloud computing is well-organized and explained in detail. The model's strength lies in its capacity to offer various deployment modes that can be customized to cater to different organizations' specific requirements. For instance, the Cloud over Blockchain (CoB) mode could benefit organizations focused mainly on cloud services, while the Blockchain over Cloud (BoC) mode may be suitable for those focusing on blockchain services. The Mixed Blockchain-Cloud (MBC) mode can combine the benefits of both cloud and blockchain services, making it valuable for organizations that want to leverage both.
Another advantage of the proposed model is that it offers several benefits, including secure data transfer and transparent data usage. By merging blockchain and cloud computing advantages, the model may alleviate some of the challenges related to cloud datacenters, such as service outage, payment management, governance, multi cloud integration, as well as security and privacy concerns.

Results & Validation:

BoC deployment emphasizes the significance of blockchain and cloud functionality. By using this model to redesign cloud data centers, the centralized computing role of cloud computing can be further emphasized. The smart contract can take on complex or computationally heavy workloads, resulting in blockchain-enabled applications being strengthened. However, this deployment has limited influence on reengineering cloud data centers.
In MBC-enabled applications, both blockchains and cloud computing play equally important roles. This deployment fully utilizes the technical features of blockchains in redesigning cloud data centers. It can address many of the drawbacks of cloud data centers, such as achieving privacy-preserving identity validation in wireless communications and tamper resilience.

Analysis of Results:

Overall, authors make a valuable contribution to the field of reengineering cloud datacenters using blockchain technology. The proposed model is well-structured, offering several deployment modes and potential benefits.

Conclusions:

Embedding blockchain systems in validation operations and service deliveries with records requires a significant reengineering effort.

INS- 6324
Advance Topic in Software Engineering
Academic Integrity

In order for your Assignment/Homework/Project to be accepted you must read the following, sign this form and attach it to your papers (as the last page of your assignment).

Academic Integrity: Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

Student Signature: Yogesh Date: 03/06/2023

Student Id Number: 1001879640