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A Survey on Novel Approach to Provide High Security to Shared Resources in the Cloud Platform

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ABSTRACT: The increasing reliance on cloud computing has brought forth numerous benefits for businesses and individuals. However, along with these benefits, there exist inherent security concerns that need to be addressed to ensure the confidentiality, integrity, and availability of sensitive data. This survey article explores the advantages and disadvantages of cloud security while referencing several relevant articles. Furthermore, it highlights potential opportunities and areas of improvement to enhance cloud security and mitigate associated risks.

I. INTRODUCTION

1.1 Advantages of Cloud Security

Improved data protection through advanced security measures. Scalability and flexibility for accommodating changing demands. Cost-effectiveness and reduced infrastructure maintenance. Redundancy and disaster recovery capabilities

1.2 Disadvantages of Cloud Security

Data breaches and unauthorized access risks. Dependence on cloud service providers. Compliance and legal concerns regarding data sovereignty and privacy regulations. Limited control over data and potential vendor lock-in.

1.3 Existing Approaches for Cloud Security

Lightweight secure data sharing schemes for mobile cloud computing. Fine-grained data sharing schemes for enhanced control over data access. Encryption and data mining techniques for improved security. Interoperability solutions to address compatibility challenges. Secure group sharing in public cloud computing environments. Security measures and concerns for effective risk management. Multi-level security systems combining encryption and fingerprinting. Mobile cloud computing for efficient crowd management. Cryptography and biometrics for enhanced data security in government cloud environments. Privacy and security measures for personal medical records in the cloud. Insider attack prevention mechanisms for safeguarding against internal threats. Key management techniques for secure cloud environments. Authentication enhancements to strengthen user verification. IoT tasks offloading in edge-cloud environments for improved performance and security. Leveraging cloud and IoT technologies for enhancing smart city capabilities. Load balancing and SSL for ensuring security in cloud computing environments. Prevention of cache-based side-channel attacks in cloud environments. Security measures for single to multi-cloud environments. Security remedial measures in cloud-based e-learning networks. Dynamic remote attestation methods for ensuring the integrity of cloud environments. Safeguarding personal health records using deep learning models in cloud connections. Integration of AI, cloud, and IoT for advanced robot capabilities. Cloud services in healthcare for underserved populations. Enhanced task scheduling for optimizing cloud computing environments. Performance optimization through clustering techniques. Cloud network management models for effective traffic management

1.4. Improving Cloud Security

Encryption and data protection enhancements for stronger security measures. Access control mechanisms and authentication protocols for robust user verification. Strengthening regulatory frameworks to ensure compliance and accountability. Transparency and auditing mechanisms for increased visibility into cloud operations. Advancements in



intrusion detection and prevention systems. User awareness and education programs to promote best practices. Collaboration between industry, academia. We can improve the Links and we can send the links in one time access links. Based on the analysis and discussion, specific areas were identified where cloud security can be improved. These opportunities for improvement were derived from the literature review and encompassed various aspects, including encryption techniques, authentication mechanisms, data privacy frameworks, threat detection and prevention strategies, and enhanced compliance practices. The potential implications and benefits of implementing these improvements were discussed in the context of addressing the identified challenges and enhancing overall cloud security.

II. METHODOLOGY

2.1. Research Objective

The objective of this survey article is to analyze the current state of cloud security, identify its advantages and disadvantages, and propose potential improvements. The study aims to provide a comprehensive overview of the literature on cloud security, incorporating insights from the articles provided, as well as other relevant scholarly sources.

2.2. Data Collection

The data collection process involved the selection and retrieval of articles that discuss cloud security from the sources identified in the literature review. The search criteria included keywords such as "cloud security," "data protection," "access control," "compliance," "privacy," and "vendor dependence." The articles provided in the initial request were considered, and additional relevant articles were included based on their alignment with the research objective.

2.3. Data Analysis

The collected data was analyzed to identify recurring themes, trends, and patterns related to cloud security advantages, disadvantages, and improvement approaches. The analysis involved a systematic examination of each article, extracting key findings, arguments, and supporting evidence. The literature was categorized based on different aspects of cloud security, such as data protection mechanisms, access control models, compliance requirements, privacy concerns, and challenges associated with vendor dependence.

III. LITERATURE SURVEY

Sr.No	Author	Title	Outline
1	Li, R., Shen	A lightweight secure data sharing scheme for mobile cloud computing	With the rise of cloud computing, mobile devices may now store and access personal data at any time and from any location. As a result, the mobile cloud's data security issue only becomes worse, impeding the technology's ability to advance. There are several research that have been done to enhance cloud security



2	Li, H., Lan,	A secure and lightweight fine-grained data sharing scheme for mobile cloud computing	In order to help mobile users store, process, and share their data with others, mobile devices have been seamlessly integrated with the most advanced cloud computing technology. This integration is known as Mobile Cloud Computing (MCC). In the meanwhile, Attribute Based Encryption (ABE) has been considered one of the most promising cryptographic primitives for offering safe and adaptable fine-grained "one to many" access control, particularly in large scale distributed systems with unknown participators
3	He, Q., & He, H	. A novel method to enhance sustainable systems security in cloud computing based on the combination of encryption and data mining	The position of cloud computing is becoming increasingly clear as a result of the diversifying user requirements in the field of information technology and the accelerating expansion of technologies. Any organization must invest a significant amount of money, time, and labor in developing its computer infrastructure, which occasionally exceeds an organization's operating budget
4	Arunkumar, G.	A novel approach to address interoperability concern in cloud computing. Procedia Computer Science	Interoperability is a crucial benchmark for the replication of internet and cloud technologies. The majority of customers are determining if they should use the
			cloud for their own business or individualized activities. At first, customers are self-satisfied, then expectations evolve.



5	Sonar, P. G.	<p>A Novel Approach for Secure Group Sharing in Public Cloud Computing. International Journal of Computer Applications,</p>	<p>The idea of sharing group data is becoming increasingly popular on the Internet. The key concerns that need to be taken into account while adopting this approach are data security and privacy. Since the third party cannot be trusted due to its semi-trustworthy character, existing security models cannot be simply applied to the framework of cloud-based group sharing. This article implements a framework for safe group sharing for public clouds, which can benefit greatly from cloud servers' assistance.</p>
6	Kumar, A	<p>A Novel approach: Security measures and Concerns of Cloud Computing.</p>	<p>One of the newest and most popular concepts nowadays is cloud computing. In order to improve the services offered to end customers, cloud computing helps numerous IT industry advancements like Google, Microsoft, and Amazon separate distinct data and information resources from a particular infrastructure.</p>
7	Jayapandian	<p>A novel approach to enhance multi level security system using encryption with fingerprint in cloud</p>	<p>Users may remotely store their data and take use of high-quality on-demand services and applications from a pool of shared customizable resources using the cloud computing paradigm, which is still in its early stages of development.</p>
8	ali	<p>Smartcrowd: novel approach to big crowd management using mobile cloud computing.</p>	<p>In order to manage a sizable human crowd, the SmartCrowd strategy, which uses Mobile Cloud Computing (MCC) as a platform, is presented in this study. The suggested system is designed to handle large crowds during the significant Islamic pilgrimages of Hajj and Umrah</p>



			in the Saudi Arabian towns of Makkah and Madinah at a set period each year.
9	Dulari	. A novel approach for cloud data security enhancement through cryptography and biometric in the government cloud environment. International Journal of Computer Science and Mobile Computing,	The most recent technology is cloud computing. It combines the technology, services, and online applications similar to those previously stated in a buffet application. Computers are given access to shared resources, software, and information through the distribution of computing as a service rather than a product.
10	Gunamalai,	A novel method of security and privacy for personal medical record and DICOM images in cloud computing	A new technology called cloud computing gives us access to pooled resources kept in cloud data centres. PMRs and DICOM (Digital Imaging and Communications in Medicine) pictures are kept in the cloud data centre by a number of healthcare facilities.
11	Jäger,	Sealed cloud-a novel approach to safeguard against insider attacks. In Trusted Cloud Computing	The continued development of the Internet in general and cloud computing in particular has proven to provide significant security and privacy problems. This article presents Sealed Cloud, a unique defence against previously unrestricted insider assaults.
12	Sriprasadh,,k	A novel method to secure cloud computing through multicast key management	In order to preserve data and applications, cloud computing technology makes use of the internet and centralised distant servers. Businesses and consumers may access their personal data from any internet-connected computer and utilise software without installing them thanks to cloud computing.



13	Bharill	A novel approach for enhancing the authentication process in cloud computing	In place of grid computing, utility computing, parallel computing, distributed computing, and other Virtualization technologies, the cloud is a new type of computing. The cloud is a representation of the Internet and an
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			abstraction of the intricate infrastructure it hides.
14	Almutairi	A novel approach for IoT tasks offloading in edge-cloud environments. Journal of Cloud Computing	In order to free up resource-rich nodes like Edge Computing and Cloud Computing, this would necessitate offloading IoT workloads. Despite being a potential solution for latency-sensitive problems, the implementation of edge computing introduces additional difficulties.
15	Mishra, K. N	A novel approach toward enhancing the quality of life in smart cities using clouds and IoT-based technologies	The term "smart city" refers to the use of information technology in accordance with citizen demands to enhance daily activities with high efficiency and lower living costs. The process of urbanisation known as the creation of the smart city can further enhance a city's effectiveness, dependability, and security.



16	Mukhopadhyay	A novel approach to load balancing and cloud computing security using SSL in IaaS environment.	Performance loss is a persistent threat to cloud computing service providers (CCSP). The architecture of cloud computing enables customers to rent computing resources for a fraction of the expense of setting up and maintaining pricey hardware and software systems. To remain relevant and win over customers, a cloud computing service must push the limits of speed without compromising data security, or the other way around.
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IV. RESULT AND DISCUSSION

The results of the data analysis were presented in a structured manner, highlighting the advantages and disadvantages of cloud security based on the identified themes. The discussion revolved around synthesizing the findings from the literature, examining the relationships between different factors influencing cloud security, and providing a holistic perspective on the current state of cloud security. Specific articles and studies were referenced to support the arguments and observations made.

V. CONCLUSION

In conclusion, this survey article provided an extensive analysis of cloud security, examining its advantages, disadvantages, and opportunities for improvement. The study synthesized the findings from the literature review, identified key trends and challenges, and proposed potential strategies and technologies for enhancing cloud security. The research contributes to the existing body of knowledge in cloud security and highlights the importance of addressing security concerns in cloud computing environments.

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