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ENSURE SECURITY AND OWNERSHIP DETECTION IN CLOUD COMPUTING

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ABSTRACT:-*In the paradigm of Internet computing known as "cloud computing," dynamic, scalable, and frequently virtualized resources are highly centralized, and customers are provided with storage services by a super-storage facility on the Internet using virtualization technology. It uses a multi-tenancy mode to provide a variety of services to the general population. Although customers are benefiting from the supercomputing and massive storage offered by cloud computing, cloud security—basically, the management of trust between data owners and storage service providers—remains a hot spot problem. The security issue with virtual storage in cloud computing is known as cloud security. The choice of data storage services for data owners transforms the traditional problem of data storage into a social challenge that reflects human social activities onto the internet in miniature. Owners of data are concerned about how their data will be used or disclosed to a third party without their consent. Therefore, the important issue in*

cloud security is the management of trust between data owners and storage service providers, which necessitates an effective restriction on data consumption. To address the problem of managing trust between data owners and storage service providers, we therefore suggest a cloud watermarking using colour drop technique. A Colour drop cloud watermarking technique is to identify and ensure Ownership.

Keywords ---- Cloud Computing, Cloud Security, CORDS , Ownership Protection, Cloud Watermarking, Colour Drop.

1. INTRODUCTION

Cloud computing is Internet-based computing in which pooled resources, software, and information are made available to users as needed, much like how the electrical grid works. The provisioning of dynamically scalable and frequently virtualized resources as-a-service over the Internet is typically involved in it. It describes a new consumption and delivery model for IT services based on the Internet. Customers rent resources from a third-party supplier instead of purchasing or maintaining the physical infrastructure, which saves them money on capital expenses. They use resources as a service and only pay for what they really use.

The National Institute of Standards and Technology (NIST) defines cloud computing as a delivery model for IT services as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with little management effort or service provider interaction."

NIST specify five characteristics of cloud computing

On-demand self-service includes users ordering computing resources, like more computers, network bandwidth, or user email accounts, through a website or a similar control panel interface without interacting with the vendor directly.

Broad network access enables users to access computing resources from a variety of computing devices, including laptops and smartphones, across networks like the Internet.

Resource pooling involves providers offering cloud services to numerous clients while leveraging pooled computing resources. To separate and safeguard each customer's data from that of other customers and to give the impression to consumers that they are the only users of a shared computer or software application, virtualization and multi-tenancy methods are often utilized.

Rapid elasticity makes it possible to quickly and automatically raise and reduce the amount of processing, storage, and network bandwidth available in response to consumer demand

- **Pay-per-use measured service** entails allowing consumers to monitor their utilization and only pay for the computing resources that they actually utilize. This is comparable to how households utilize utilities like electricity.
- Remotely access anytime
- Scalability and flexibility high security and dependability.
- Now, businesses can dream large but start small with tight finances.

2. BACKGROUND AND RELATED WORK

2.1 Overview of business drivers to adopt cloud computing

Cloud computing has the ability to assist organizations in utilizing cutting-edge innovations like computer virtualization and global Internet access. Several of the main business factors include:
pursuing new business prospects, such as testing out novel approaches to connect and communicate with clients online.

By substituting upfront costs with reasonably predictable operational expenditure and only paying for the computing processing and data storage that is actually used, it is possible to reduce the upfront costs of capital expenditure for computer equipment and related expenses, such as a physical data centre and support staff, while lowering the associated financial risk to the agency.

The use of infrastructure and technical experts, which are frequently shared by many customers to achieve economies of scale, could potentially lower ongoing costs. However, the cost of implementing controls to help address security risks, particularly those associated with shared infrastructure, may reduce the potential cost savings of some types of cloud computing.

If users have guaranteed network connectivity, the infrastructure can quickly and flexibly scale to meet peaks and troughs in usage demand, and the computing infrastructure is typically located in multiple physical locations for improved disaster recovery, these factors could potentially improve business continuity and the availability of computing infrastructure; they could also potentially reduce carbon footprint because more effective computer hardware uses less energy.

Moving publicly accessible data to the public cloud might make good commercial sense. If properly implemented, a vendor’s extra network bandwidth and processing power automatically help to reduce various sorts of distributed denial of service attacks on the computer applications of your choice. This technological advancement minimizes financial waste because it(DDoS) attacks. DDoS attacks can be lessened with the aid of technologies like “any cast” and global Content Delivery Networks (CDN), which geographically distribute network traffic and computer processing throughout the globe. Although building these technologies in-house would be prohibitively expensive for every agency, renting them from vendors is relatively inexpensive. This would improve the availability and business continuity of publicly available data. A DDoS attack might not damage an agency’s website’s accessibility, but the agency might be required to pay for the computer processing and network bandwidth the DDoS attack used.

The confidentiality of data stored or processed by organizations using cloud computing, such as on a public website, may not be an issue. However, the agency's risk assessment should take into account the

accessibility and reliability of the public data, as well as any reputational or other harm that could result from a corrupted or offline agency system that disseminates false information or malicious content.
The hiring and upkeep of specialized IT workers, as well as the computing software and gear needed to store and process data, can be outsourced to a vendor to free up an agency's internal resources for core operations. The agency is however ultimately in charge of ensuring the security of their data.

3. NEED AND IMPORTANCE OF RESEARCH PROBLEM

There is no avoiding the cloud. Every improvement and setback in the as-a-service paradigm are chronicled in headlines with equal enthusiasm. The approach is promoted by the suppliers as the answer to all company problems and hard budget cuts. And IT specialists are rushing to develop a cloud strategy that will not only save costs for their company but also enable the level of operational agility that business requires to compete in the market. However, the majority of organizations still only use the cloud to service a small portion of their IT requirements today.
A remote server that can be accessed through the internet and used for corporate applications, feature add-ons, and software use is known as the “cloud.” The PC has access to the internet modem’s cloud of services and programmes. Cloud computing facilitates logging into the desired computer programmes. With cloud computing, one can access web services, sales force automation software, office automation software, even blogs, spam filtering services, and data storage services with just a single log-in, saving money that would otherwise be spent on other cable services that require a monthly or annual subscription. The business people are assisted with better tracking activities and stop any further technological disasters such as the loss of data loss, computer viruses and system crashes.
Sharing massive volumes of data among numerous business offices is made possible by the business information stored on a virtual server. It is a Web-based programme that may be used without special equipment or servers to link back to the office via a virtual private network by anyone who is travelling (VPN). As a result, it will reduce your frustration while saving you a lot of time. "The Cloud computing" is a fantastic tool that also helps you save a tonne of money. The costs from various sources can be compared to gain an understanding of this. Since it is challenging to continuously monitor every device and application, cloud computing offers its important services in case of emergencies to contact the organization and keep an eye on the processes. Consequently, the services are never interrupted by the best monitoring software. By assessing you to technology solutions faster and faster, cloud computing lowers the company hazards. The hosting firm offers innovative technological solutions that will undoubtedly improve your organisation in a captivating approach because it frequently interacts with various business chances.

4. OBJECTIVES

The objective focuses on technologies specific to the dimension of software and access to services and ownership. It will support long-term research on new principles, methods, tools and techniques enabling software developers in the EU to easily create interoperable services based on open standards, with sufficient flexibility and at a reasonable cost. Target outcomes

a) Cloud Computing

- Intelligent and autonomic management of cloud resources, ensuring agile elastic scalability. Scalable data management strategies, addressing the issues of heterogeneity, consistency, availability, privacy and supporting security.
- Technologies for infrastructure virtualization, cross platforms execution as needed for service composition across multiple, heterogeneous environments, autonomous management of hardware and software resources.

- Interoperability amongst different clouds, portability, protection of data in cloud environments, control of data distribution and latency.
- Seamless support of mobile, context-aware applications.
- Energy efficiency and sustainability for software and services on the cloud.
- Architectures and technologies supporting integration of computing and networking environments; implications of Cloud Computing paradigm on networks
- Open Source implementations of a software stack for Clouds

b)Internet of Services

- Service engineering principles, methods and tools supporting development for the Internet of Services, including languages and tools to model parallelism.
- Services enabled by technologies for seamless integration of real and virtual worlds, through the convergence with Internet of Things and Internet of Contents.
- Massive scalability, self-management, verification, validation and fault localization for software-based services.
- Methods and tools to manage life cycle of secure and resilient Internet-scale applications from requirements to run-time and their adaptive evolution over time.

c)Advanced software engineering

- Advanced engineering for software, architectures and front ends spanning across all abstraction levels.
- Quality measure and assurance techniques which adapt to changing requirements and contexts, to flexibly deal with the complexity and openness of the Future Internet.

d)Coordination and support actions

- Support for standardization and collaboration in software and services technologies.
- Support for the uptake of open source development models in Europe and beyond.
- Collaboration with Japanese entities on: cloud computing, particularly on common standards for data portability and on interoperability; services having more efficient energy usage.

5. SECURITY PROBLEM OF CLOUD COMPUTING

In cloud computing, resources are highly centralized, and the super-storage center on the Internet provides storage services for users by virtualization Technology. On the other hand, data owners care about their data, or reveal to the third party without authorization. The trust management between data owners and storage services providers is the essential problem in cloud security, which demands for an effective stipulation of data usage.

The proposed a data coloring method based on cloud watermarking to solve the trust management issue between data owners and storage service providers. Protecting datacenters must first secure cloud resources and uphold user privacy and data integrity. Trust overlay networks could be applied to build reputation systems for establishing the trust among interactive datacenters.

A watermarking technique is suggested to protect shared data objects and massively distributed softwaremodules. These techniques safeguard user authentication and tighten the data access-control in public clouds. The new approach could be more cost-effective than using the traditional encryption and firewalls to secure the clouds.

6. METHODOLOGY

Digital watermarking is a technology of copyright protection, which embeds the copyright information into digital production to avoid, being tampered, peculated, and illegally copied. The main idea of watermarking is to introduce small images or patterns into the data to be watermarked without affecting

the data subject to normal use. If an illegal copy occurs, the owner of the data can therefore get watermarks from the illegal data to verify his ownership of the data. Cloud watermarking is a digital watermarking technology based on cloud model, which has widely been applied in text and relation database. Cloud model is a transform model between qualitative concepts and quantitative data. In this we firstly user have to create it's account in the cloud to access any cloud services here it's all data have been recorded in database, like image, it's login information, and other user necessary information. When ever user login to account it's entry recorded then after user upload the image in the cloud, here image is firstly checked weather the image is already available in the database if it is then it will be compared with existing image to get it's similarity factor and similarity percentage

In the process of data coloring, the location of the watermark to be embedded and the algorithm for embedding are decided by a user's requested security strength and allowable expense. Security strength will determine extra storage space, and algorithm complexity will decide time expense of data accessing.

At present, most of the watermarking algorithms focus on multimedia data, especially on digital images. The common digital watermark embedding algorithms include airspace algorithm, patchwork algorithm, Nippon electric company (NEC) algorithm, physiological model algorithm, etc. According to the different data source type (such as image, video, audio, and text), different embedding methods will be adopted. In our view, the colored data is also usable, so the watermarking changes the original data only with a subtler granularity. The granularity is decided by data source type. For a group climate data, in order to ensure the usability of data, we can embed watermarks by adding tails into data that only change the precision rather than the correctness.

6.1 Cloud model

To ensure that when the security features are stable, these features can be included by the algorithm that is embedding your image as a watermark, the preparation algorithm is merged with the creation of the protection features as well as the administration framework. The three characteristics worked together to create the objects' basis. The planning algorithm additionally provides the website link that is website the technical and administration aspects of the most wonderful solution is. When you look at the choice this is certainly first using the flow drawing (figure 4.2) a dedication with this standing in connection with image that is incoming created to cope with the problem of user watermarks passages supplier watermarks. To ensure that when the security features are stable, these features can be included by the algorithm that is embedding your image as a watermark, the preparation algorithm is merged with the creation of the protection features as well as the administration framework. The three characteristics worked together to create the objects' basis.

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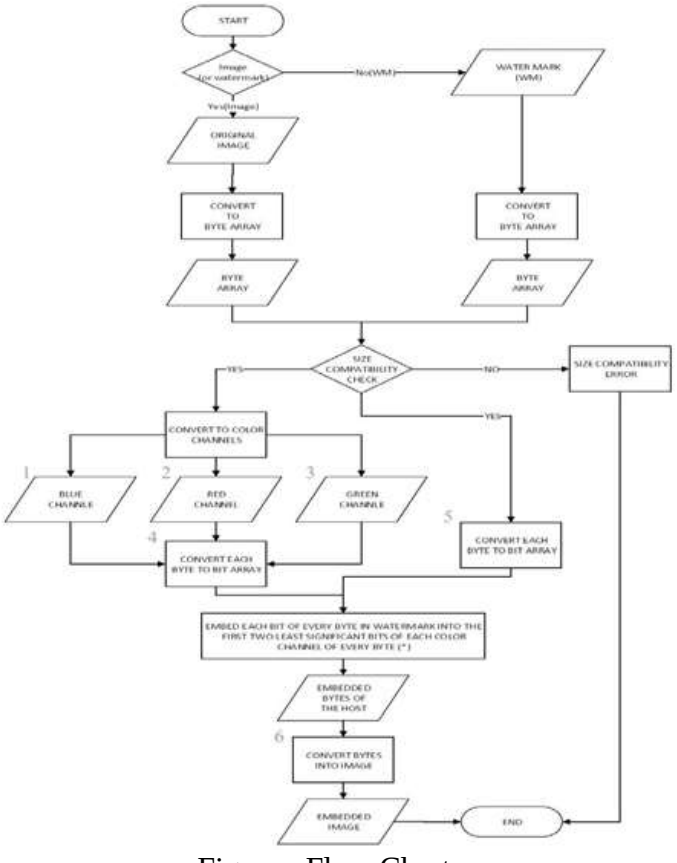

Figure : Flow Chart

6.2 Water marking using colour drop technique

Compare with pervious digital water marking technique, the colour drop water marking not just embed user copyright into data, but dynamic code of user data. That is to say not only the hole data is embedded with water marking but a fragment is branded. Each time, each user will get a random dynamic password for its data, which is able to protect copyright and should not affect the normal use of data. In the procedure of colour drop watermarking the image is converted into bit of array which is embedded with fix password, Dynamic password and HASH code using DWT embedded process which form invisible water marking image.

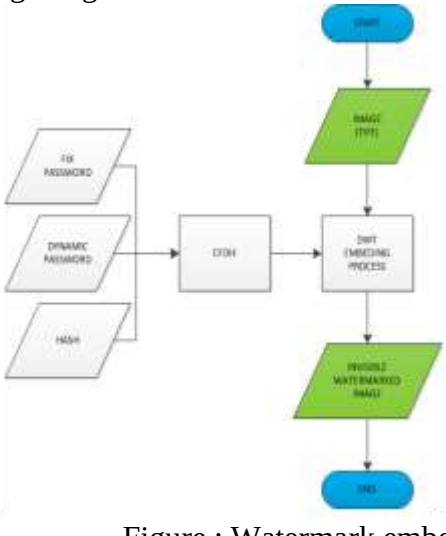

Figure : Watermark embedding

6.3 Colour drops

The colour drop Technique for invisible water marking a random password generator embedded with fix password which is converted into bit of array which again converted into hexadecimal code. The colour generator will generate the colour with the hexadecimal code which is used for water marking the location for water marking is randomly generated.

6.4 Water mark detection

For water marking the image, we are using user password and dynamic password which is randomly generated every time. In colour drop water marking technique a random location is selected for colour drop in such a way that it will not effect the data/information. Every time its SHA-512 and HASH code is generated. While removing the water marking these information(SHA-512(HASH), dynamic password, user pass word)is used. These will provide high level of security and ownership detection to the user.

7. SCOPE OF WORK

The range decrease in this analysis's available data offers a lot of opportunities for further work. The implications of what has been accomplished go beyond what has already been done to address some of the several other open problems in the field of appropriate for ownership and digital rights. Following is a list of the essential points in each paragraph:

Future research growth may focus on various file types, which might be examined and tested for their suitability for employing the methodologies and watermarking described in this study.

According to the literature review for this thesis, little attention has been given to the persistent issues that cloud computing has brought up regarding the protection of intellectual property and privacy. There has to be a thorough investigation of this area as well as the effects of cloud computing as an information technology with regard to these issues.

Because of its utility, the model that has been created can now be transferred into different situations to test. The technology developed here has energy value because it may be installed in various locations where people are now using the cloud for information management. The wellness industry includes, for instance, the legal, educational, and training sectors.

The updating of cloud policies, particularly from the cloud service providers' end, including the security and privacy as well as other ownership issues, is one of numerous larger issues that has not been addressed. In order for lawmakers and other stakeholders in computer services to fairly explain settings that will benefit both the final user and the cloud provider, further research on this topic is necessary at the policy level.

The major challenge in this area is for consumers to be able to access practical applications online and for cloud providers to have access to them. In order to handle the biggest problems that are still unresolved, there needs to be computer software that is undoubtedly more aware of the problem. This thesis has made a contribution that is unquestionably significant, filling a vacuum not only in the literature but also in the practical application of services that could safeguard legitimate ownership and online rights.

9. CONCLUSION

Cloud security is still a hot topic with the growth of cloud computing. The use of the cloud as a tool to solve security issues is truly nothing new. Viruses and software flaws are still present on the Internet nowadays, although security can be seen as a service offered by specialised security centres in cloud computing. In general, cloud security differs from computer, network, and data security; it is not essentially a straightforward technological issue. In order to address the issue of managing trust between data owners and service providers, this study attempts to offer fresh insight into the fundamentals of

cloud security and suggests a data colouring method based on cloud watermarking. The outcome of the experiment demonstrates how uncertain and irreversible the process is, and how the reverse cloud generator's reliability can ensure users' implanted social reputation identifications. Even while online shopping, working from home, email, and other aspects of daily life have already been impacted by cloud computing, many people are still unsure of its security. Similar to good dependability and safety, a service provider's standing in the community is a crucial assurance, and cloud computing is built on this confidence. We will carry out additional research in cloud computing facilities in the future, evaluate the effectiveness of our methodology, and potentially develop a standard for cloud security.

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