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DESIGN AND RECTIFICATION OF PRIVACY RELATED ISSUES TOWARDS CLOUD ENVIRONMENT

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Abstract:
Cloud computing changed the world around us. Nowpeople are moving their data to the cloud since data is gettingbigger and needs to be accessible from many devices. Therefore, storing the data on the cloud becomes a norm. However, thereare many issues that counter data stored in the cloud startingfrom virtual machine which is the mean to share resources incloud and ending on cloud storage itself issues. In this paper,wepresent those issues that are preventing people from adoptingthe cloud and give a survey on solutions that have been done tominimize risks of these issues. For example, the data stored in thecloud needs to be confidential, preserving integrity and available.Moreover, sharing the data stored in the cloud among many usersis still an issue since the cloud service provider is untrustworthyto manage authentication and authorization.The proposed system uses DES algorithm for multiple key generation still to make more security and accessing data in efficient manner.

Key Words: Data security, Data Confidentiality, Data Privacy, Cloud Computing & Cloud Security

1. Introduction:

Cloud computing now is everywhere. In many cases, usersare using the cloud without knowing they are using it. Accordingto [1], small and medium organizations will moveto cloud computing because it will support fast access totheir application and reduce the cost of infrastructure. TheCloud computing is not only a technical solution but alsoa business model that computing power can be sold andrented. Cloud computing is focused on delivering services.Organization data are being hosted in the cloud. The ownershipof data is decreasing while agility and responsiveness areincreasing. Organizations now are trying to avoid focusingon IT infrastructure. They need to focus on their businessprocess to increase profitability. Therefore, the importance ofcloud computing is increasing, becoming a huge market andreceiving much attention from the academic and industrialcommunities. Cloud computing was defined in by the USNational Institute of Standards and Technology (NIST). Theydefined a cloud computing in [2] as a model for enablingubiquitous, 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 minimal management effortor service provider interaction.

Schematic definition of cloudcomputing can be simple, such as seen in Figure 1. There is a sudden increase in the cloud computing system's intervention that provide computing resources based on demand and multiplexing many users on the same physical infrastructure. These cloud computing environments provide a fantasy of unlimited computing resources to cloud users so that they can increase or decrease their consumption of resources and thus rate according to the demands. The cloud environment provides anumber of challenges. Cloud providers and cloud users, follow different goals, providers want to maximize profits by achieving high resource consumption, while users want to minimize expenses.

Figure 1: Schematic definition of cloud computing

However, it is difficult for resource allocation in a comfortable way due to the shortage of information sharing between those members.The past few years have witnessed the proliferation of streaming data generated by a variety of applications/systems, such as GPS, Internet traffic, asset tracking, wireless sensors, etc.

Retaining a local copy of such exponentially growing volume of data is becoming prohibitive for resource-constrained companies/organizations, let alone offering efficient and reliable query services on it. Consider a stream-oriented service (e.g., market analysis, weather forecasting and traffic management), where *multiple* resource-constrained sources continuously collect or generate data streams, and outsource them to a powerful external server, e.g. cloud, for desired critical computations and storage savings.

For example, using inner product computation over any two outsourced stock data streams from different sources for correlation analysis, a stock market trader is able to spot the arbitrage opportunities.In addition, memory; processor, bandwidth and storage are visualizedand can be accessed by a client using the Internet [3-5]. Cloudcomputing is composed of many technologies such as serviceoriented architecture, virtualization, web 2.0 and more. Thereare many security issues with cloud computing. However, thecloud is needed by organizations due to the need for abundantresources to be used in high demand and the lack of enoughresources to satisfy this need. Also, cloud computing offershighly efficient data retrieval and availability. Cloud providersare taking the responsibility of resource optimization.

2. Research Issues:

There are five characteristics of cloud computing. The firstone is on-demand self-service, where a consumer of services isprovided the needed resources without human intervention andinteraction with cloud provider. The second characteristic isbroad network access, which means resources can be accessedfrom anywhere through a standard mechanism by thin orthick client platforms such mobile phone, laptop, and desktopcomputer. Another characteristic is resource pooling, whichmeans the resources are pooled in order for multi-tenants toshare the resources. In the multi-tenant model, resources areassigned dynamically to a consumer and after the consumerfinishes it, it can be assigned to another one to respond tohigh resource demand.

Even if consumers are assigned toresources on demand, they do not know the location. The Cloud Computing Interoperability (CCI) is a hot re- search topic and has been addressed by many scientists, architects, groups etc. A lot of different approaches and possible solutions are published, but there is no accepted standard or model yet. This paper is a survey of the most influential published CCI models and discusses their possibilities and challenges. The accent in this paper is set to analysis of the Software as a Service (SaaS) CCI model based on adapters. The current state of the cloud computing market and the results of recent Cloud Computing (CC) market surveys are also included in our analysis [6].

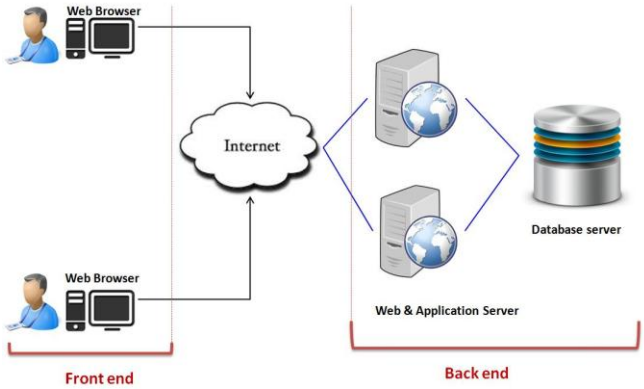

Figure 2: Cloud environment architecture

Sometimes they know the location at ahigh-level abstraction, such as country, state, and data center. Storage; processing, memory, and network are the kind ofresources that are assigned. Rapid elasticity is also one of thecloud computing characteristics, which means that resourcesare dynamically increased when needed and decreased whenthere is no need.

Also, one of characteristics that a consumerneeds is measured service in order to know how much isconsumed. Also, it is needed by the cloud provider in order toknow how much the consumer has used in order to bill himor her.Cloud computing is based on consistent, safe, fault tolerant, sustainable, and scalable environment for hosting internet-based application services. These applications have variance in composition, configuration, and exploitation requirements. Cloud environment providers are likely to provide large scaled computing infrastructure at a low level prices. calculating the performance of scheduling and shared policy on a Cloud infrastructure (hardware, software, services) for multiple application and service models under varying load, energy performance (power consumption, heat dissipation), and system size is a really challenging problem to tackle. This problem can be deal with the help of mobile agents.Business environment is used to handle the execution of a enormous amount of work [7]. Especially if workflow steps require the invocation of resource-intensive applications or a large number of applications needs to be carried out concurrently, process owners may have to allocate extensive computational resources, leading to high fixed costs. Data owners could make use of Cloud based technology, runtime leasing and releasing resources based on demand, which could lead to lower costs. In the work at hand, we propose a resource-efficient workflow scheduling algorithm for

business processes and Cloud-based computational resources. The goal of implementing complex systems with high performance and intelligent applications. When making reservations for Cloud services, the consumer should provide with price and time slot for the service.

The provider gives the price and time slot which are available, then the particular service will be provided to the user by negotiation of both price and time. Since there is a negotiation on price and time slot, the requested service may be unavailable. So, consumers can give multiple proposals for a service. After the reservation is done the job is monitored to get the QoS violations. When there is a malfunction certain actions will be carried out for the remedy like requesting for resources if necessary. To get a highest possible QoS assurance the negotiation uses a trade off algorithm which makes available of the resources to the services requested. When the task done by the consumer is over before the reserved time the QoS can't be obtained effectively because of the idle state.Cloud computing offers an economical and feasible solution for scientific workflow applications requiring large amounts of computational resources and expensive hardware. Supporting Cloud workflow execution involves [8]: (i) allocating and composing a collection of Cloud resources, and (ii) coordinating distributed and self-interested participants. The contributions of this research are: (i) proposing an agent-based approach for supporting workflow execution in one or multiple Clouds, (ii) defining Petri-net based methodologies to design workflows and Cloud resources that sustain concurrent and parallel management of workflows, (iii) implementing an agent-based test bed to simulate distributed workflow execution. Even with these many benefits of cloud computing, previouslymentioned, users are reluctant to adopt this technologyand move from conventional computing to cloud computing [4]. In cloud computing, security is a broad topic.

It is a mix of technologies, controls to safeguard the data, and policies toprotect the data, services, and infrastructure. This combinationis a target of possible attacks. Therefore, there are newsecurityrequirements in the cloud compared to traditional environments.Traditional security architecture is broken because thecustomer does not own the infrastructure any more. Also, theoverall security cloud-based system is equal to the security of the weakest entity. By outsourcing, users lose theirphysical control over data when it is stored in a remoteserver and they delegate their control to an untrusted cloud provider or party. Despite powerful and reliableserver compared to client processing power and reliability,there are many threats facing the cloud not only from anoutsider but also from an insider which can utilize cloud vulnerabilities to do harm. These threats may jeopardizedata confidentiality, data integrity, and data availability. Someuntrusted providers could hide data breaches to save their reputations or free some

3. Proposed System:

However, with the many benefitsmulti-tenancy offers, this leads to many challenges regardinghaving more than one tenant on one physical machine, whichis required to utilize the infrastructure. Since tenants are inthe same place, they could attack each other. Previously, an attack could be between two separate physical machinesbut now because two or more tenants are sharing the samehardware, an attacker and a victim can be in the same place. The technology is used to keep tenants' fromeach other by providing a boundary for each tenant by usingvirtualization. However, virtualization itself is suffering from many issues. Virtualization is an important component of cloud computing.Now it is getting more attention from academic andindustrial communities. Virtualization means separation ofunderlying hardware resources from provided resources.

Byusing virtualization, two or more operating systems might runin the single machine with each having its own resources.A. Cross Virtual Machine (VM) Side-Channel Attacks. This attack requires the attacker to be in another virtualmachine on the same physical hardware with the victim. In thisattack, the attacker and victim are using the same processorand same cache. When the attacker alternates with the victim'sVM execution, the attacker can attain some information about the victim's behavior. There is an example of VMside-channel attack and how the attacker can infer someinformation about a victim. The timing side channel attack isone kind of VM side channel attacks. This attack is basedon determining the time needed by various computations.Determining this time can lead to leaking sensitive information. This attack can help in leakingsome sensitive information such as to the one who performsthis computation or sometimes leaking information out ofcloud provider itself. This attack is hard to detect becausethe owner of VM can check other VMs due privacy concern.Sometimes cloud providers can detect a side channel attackbut to protect their reputation but they do not announce it.Moreover, there is another type of side channel attacks whichis energy-consumption side channel. Cloud computing is a model for enabling everywhere, convenient, on demand network access to a shared pool of configurable computing resources. Since an Inter Cloud is a large scale distributed and interconnected computer system, interactions among its sub components (i.e., Clouds) and among stakeholders (i.e., consumers and Cloud providers) can be complex.

In an Inter Cloud, computing resources owned and administered by different Cloud providers are pooled to serve multiple consumers, and applications and data are available to and shared by a broad group of cross enterprise and cross platform users. Inter Cloud resource pooling and sharing involve: Combining resources through cooperation among Clouds, Mapping and Scheduling shared resources through coordination and Establishing contracts between Clouds and consumers, and among Clouds through negotiation.

To connect with server user must give their username and password then only they can able to connect the server. If the user already exits directly can login into the server else user must register their details such as username, password and Email id, into the server.For reading each file which have been uploaded and split into 4 parts we should be owner of the file otherwise we should know the four 8bit tokens which have been combined by random algorithm after reading the file you can also download the file otherwise with wrong tokens you can get only cipher text of the content.

Requesting a file means as you are not owner of the file but you need to read or download the file that is possible only by owner approval. The person who need the file must be requested to file owner for the tokens once the tokens have been given by the owner the person can able to read/view the file with the token otherwise the person can't able to get the file.The Data Encryption Standard (DES) is an outdated symmetric-key method of data encryption. DES works by using the same key to encrypt and decrypt a message, so both the sender and the receiver must know and use the same private key. Once the go-to, symmetric-key algorithm for the encryption of electronic data, DES has been superseded by the more secure Advanced Encryption Standard (AES) algorithm.

4. Conclusion:

The cost of this technology is more attractive when it iscompared to building the infrastructure. However, there aremany security issues coming with this technology as happenswhen every technology matures. Those issues include issuesrelated to the previous issues of the internet, network issues, application issues, and storage issues. Storing data in a remoteserver leads to some security issues. Those issues arerelated to confidentiality of data from unauthorized people inremote sites, integrity of stored data in remote servers and theavailability of the data when it is needed. Also A cloud environment uses holomorphic verifiable tag technique, and design an efficient are introduced and publicly verifiable inner product computation scheme on the dynamic outsourced data streams under multiple keys. We also extend the inner product scheme to support matrix product. Compared with the existing works under the single-key setting, our scheme aims at the more challenging multi-key scenario. Even though mathematical proofs have demonstrated that the agent based Inter Cloud economic model in this work has essential desirable properties such as optimality, stability, and fairness.

5. References:

1. M. Armbrust et al. Above the clouds: A Berkeley view of cloud computing. Tech. Rep. UCB/EECS-2009-28, EECS Department, U.C. Berkeley, Feb 2009.
2. D. Bernstein et al. Blueprint for the Inter cloud - Protocols and Formats for Cloud Computing Interoperability. Proc. 4th Int. Conf. Internet and Web Applications and Services pp. 328–336.,Venice, May 2009.
3. M. Wooldridge, An Introduction to Multi agent Systems, John Wiley & Sons, 2002.
4. K.M. Sim. "Agent-based Cloud Computing," IEEE Transactions on Services Computing. vol. 5, no. 4, Oct.-Dec., 2012, pp. 564-577.
5. K. M. Sim, Complex and concurrent negotiations for multiple interrelated e-markets, IEEE Trans. Cybernet. 43 (1), pp. 230–245, 2013.
6. S. Son and K. M. Sim, A price-time slot negotiation for cloud service reservation, IEEE Trans. Syst. Man Cybernet. B 42 (3), pp. 713–728, 2012.
7. J. O. Gutierrez-Garcia and K. M. Sim, Agent-based cloud service composition, Appl. Intell. 38 (3), pp. 436–464, 2013.