An Industry Reproduction for Cloud Computing Based on Detach Encryption and Decryption Tune

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Abstract
Cloud computing can be defined as it is a new tune, which are the collection of technologies and a means of supporting the use of large scale Internet tunes for the remote applications with good quality of tune (QoS) levelsThis paper mainly proposes the core concept of secured cloud computing i.e. it suggests the cloud computing based on detach encryption and decryption tunes from the storage tune. This paper introduces a user interface .One tune provider operates the encryption and decryption system while other providers operate the storage Even for security and data integrity we supposed to implement the One Time Password Authentication (OTP) including email updates and application systems, according to the core concept of the proposed computing copy.
This Project usually store data in internal storage andinstall firewalls to protect against intruders to access the data.They also standardize data access procedures to prevent insidersto disclose the information without permission. In cloudcomputing, the data will be stored in storage provided by tuneproviders. Tune providers must have a viable way to protecttheir clients' data, especially to prevent the data from disclosureby unauthorized insiders. Storing the data in encrypted form is acommon method of information privacy protection. If a cloudsystem is responsible for both tasks on storage andencryption/decryption of data, the system administrators maysimultaneously obtain encrypted data and decryption keys. Thisallows them to access information without authorization and thusposes a risk to information privacy. This study proposes aindustrycopy for cloud computing based on the concept ofseparating the encryption and decryption tune from thestorage tune. Furthermore, the party responsible for the datastorage system must not store data in plaintext, and the partyresponsible for data encryption and decryption must delete alldata upon the computation on encryption or decryption iscomplete. A CRM (Customer Relationship Management) tuneis described in this paper as an example to illustrate the proposedindustrycopy. The exemplary tune utilizes three cloudsystems, including an encryption and decryption system, astorage system, and a CRM application system. One tuneprovider operates the encryption and decryption system whileother providers operate the storage and application systems,according to the core concept of the proposed industrycopy.This paper further includes suggestions for a multi-party TuneLevel Agreement (SLA) suitable for use in the proposed industrycopy.

Keywords
Encryption and Decryption Cloud Tune, Data Privacy Protection, Cloud Computing, Tune Level Agreements, Tune Level Agreements (SLA)

I. Introduction

The market research and analysis firm IDC concludes that the usability in practical market of cloud computing tunes was $16bn in the year 2008 and will rise to $42bn/year by 2012 [1]. The US National Institute of Standards and Technology (NIST) define cloud computing as "a copy for user convenience, on-demand network access contributes the computing resources (e.g. networks, storage, applications, servers, and tunes) that can be rapidly implemented with minimal management effort or tune provider interference".
Cloud computing is has many technologies such as Saas i.e. "Software as a Tune", Saas i.e. "Platform as a Tune", Iaas i.e. Infrastructure as a Tune". Recently commercial copy's are developed that are described by "X as a Tune (XaaS)" where X could be hardware, software or storage etc.
As per the concept of cloud computing, the critical data of industry was stored in storage internally which are then protected by firewall to prevent from outside and unauthorized source. In the cloud computing concept, storage tune providers must have data security provisions to ensure that their client"s data is safe from unauthorized access. But in this case the use of firewall is not so reliable and secured. Tune provider must follow certain kinds of policies and regulations to protect user's data. These policies are mainly based on some specific terms and conditions which have to satisfy the basic goals of the system.

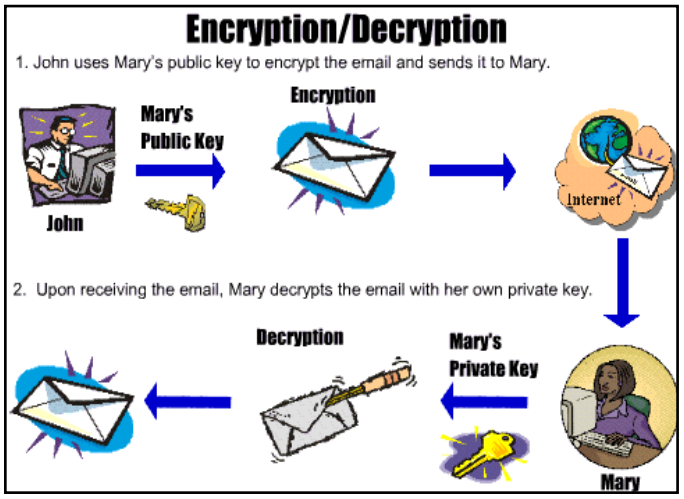


Fig. 1:

Cloud computing is a new computing paradigm and the latest megatrend in IT industry developed as a result of theconvergence of numerous new and existing technologies. It is characterized by provision of rapidly scalable and measurable IT capabilities as a tune ondemand and self-tune basis over the network from common resource pool.
The study was carried out as a single case study in a global company offering IT tunes for largeProjects and public organizations and currently preparing to introduce its own cloud tunes. Ten semi-structured interviews were conducted with managers of the case company for exploring the financial aspects of cloud tunes. Qualitative data analysis was employed for processing and summarizing the findings.Findings of the study suggested that each cloud tune should have a distinct industrycopy.The industrycopy is a mediating construct that translates the new technology to the tune's value proposition. The industrycopy also defines appropriate pricing and cost accounting mechanism for a

tune. The industrycopy's are based on tunes provider's position in Cloud computing value chain. A cloud computing industry logic framework was created to illustrate the interaction between the value chain, industrycopy's and its elements The key cost types of tunes do not necessarily change much with cloud computing. Cloud computing has still potential to significantly reduce tunes provider's costs through reengineering of production architecture. A cloud computing cost accounting copy was created toillustrate how production costs should be aggregated and distributed.

In a cloud computing environment, the tune content offered by tune providers can be adjusted according to theneeds of the user. For example, the applicant can requestdifferent amounts of storage, transmission speeds, levels ofdata encryption and other tunes. In addition to defining thetune items, the agreement normally also notes the time,quality and performance requirements provided with thetune. Generally, these tune agreements are referred to asTune Level Agreements (SLA) [4]. By signing an SLA, theuser shows that he has understood and agreed to the contents of under the industrycopy proposed in this study, the datastorage cloud system provider is authorized to store the user'sencrypted data, but does not have access to the DecryptionKey.

Thus, the storage system can only retrieve encrypted userdata, but is unable to decrypt it. The cloud computing systemresponsible for encrypting user data has authority over allencryption keys required for data encryption but, given that theencryption provider does not store the user's data, internalmismanagement of the decryption keys still poses no risk ofunauthorized disclosure of the user's data. Given that encryption is an independent cloud computingtune, a unique feature of the industrycopy is that differenttunes are provided by multiple operators. For example, theEncryption as a Tune provider and the "Storage as a Tune"provider cooperate to provide a Cloud Storage System witheffective data protection. This study provides a draft SLA forthis type of industrycopy of combining multiple providers ina single tune, which can establish the cooperation copybetween operators and the division

III. Related Works

Cloud computing is a hardware and systems software which is generally, used for the tunes related to deliver over the internet. This infrastructure is called cloud. There are various definitions available which used for clear the exact idea about cloud computing. Cloud computing has been defined by many researchers and practitioners in various ways.

In Cloud computing concept details are abstracted from the user which is provided by virtualized resources, there is no need to know the user internal details of the cloud and also internal expertise knowledge of the cloud computing or control over the technology infrastructure in the cloud that supports them. With the help of above definition we can describe new supplement, consumption and delivery copy which mainly helpful for the IT tunes, and they are based upon internet. These tunes mainly helpful for making the provision having characterized of dynamically scalable and often virtualized resources, as tunes over the internet.

A. Sourcefor Cloud Computing

The Internet began to grow rapidly in the 1990s and theincreasingly sophisticated network infrastructure and increasedbandwidth developed in recent years has dramaticallyenhanced the stability of various application tunes availableto users through the Internet, thus marking the beginning ofcloud computing network tunes. Cloud computing tunesuse the Internet as a transmission medium and transforminformation technology resources into tunes for end-users,including software tunes, computing platform tunes development platform tunes, and basic infrastructureleasing.As a concept, cloud computing primary significance liesin allowing the end user to access computation resourcesthrough the Internet, as shown in fig. 1. Some scholars findcloud computing similar to grid computing [3], but some alsofind similarities to utilities such as water and electrical powerand refer to it as utility computing [2].

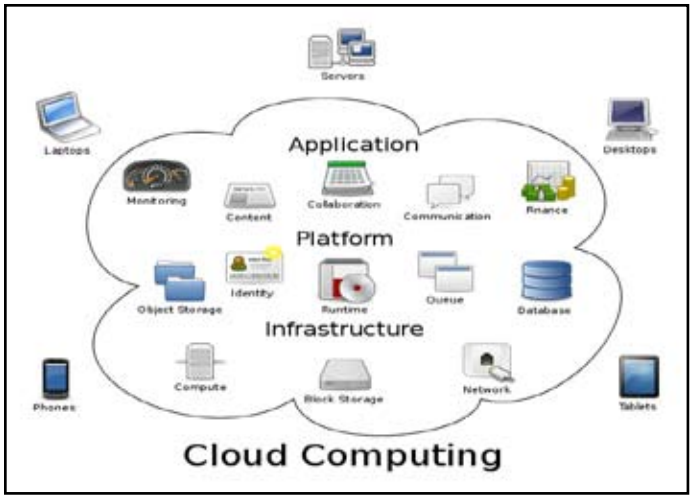


Fig. 2: Cloud Computing Concept Map

Thespecial features of cloud computing include the storage of userdata in the cloud and the lack of any need for softwareinstallation on the client side. As long as the user is able toconnect to the Internet, all of the hardware resources in thecloud can be used as client-side infrastructure.

B. Cloud Computing Industrycopys

The hardware and architecture required for providing cloudcomputing environment tunes is similar to most computerhardware and software systems. The hardware in a modernpersonal computer (i.e., CPU, HDD, optical drive, etc.) performs basic functions such as performing calculations andstoring data. The operating system (e.g., Windows XP) is theplatform for the operations of the basic infrastructure, and textprocessing software such as MSWord and Excel are applicationtunes which run on the platform.The architecture of cloud tunes can be divided into threelevels: infrastructure, platform, and application software [7]. Application software constructs the user interface and presentsthe application system's functions. Through the functions ofthe operations platform, the application can use the CPU andother hardware resources to execute calculations and accessstorage media and other equipment to store data.

If the revenue for cloud tunes primarilycomes from charging for infrastructure, this industrycopycan be referred to as Infrastructure as a Tune (IaaS). Ifrevenue comes primarily from charging for the platform, theindustrycopy can be referred to as Platform as a Tune(PaaS). If revenue primarily comes from charging forapplications or an operating system, the industrycopy can bereferred to as Software as a Tune (SaaS).

The cloud computing technologies are elaborated and showing in figure 1 as shown. In the point of view common industries, they are used cloud computing not only in „computing" but in the way of delivering IT sources to customer through their tunes. The tunes mainly divided into following three types:

1. IaaS – Infrastructure as a tune.
2. PaaS -platform as tunes.

3. SaaS- software as tune.

1. Software as a Tune (Saas)

After observing some opinion of common user (which they used cloud tunes based on software) they are required a browser which is totally free from server, IT manager and its licensing. Users are needed a tune in which they pay according to their uses. Following are the two main examples of software as a tune

1. Sales force customer relationships management (CRM).
2. Google Apps.

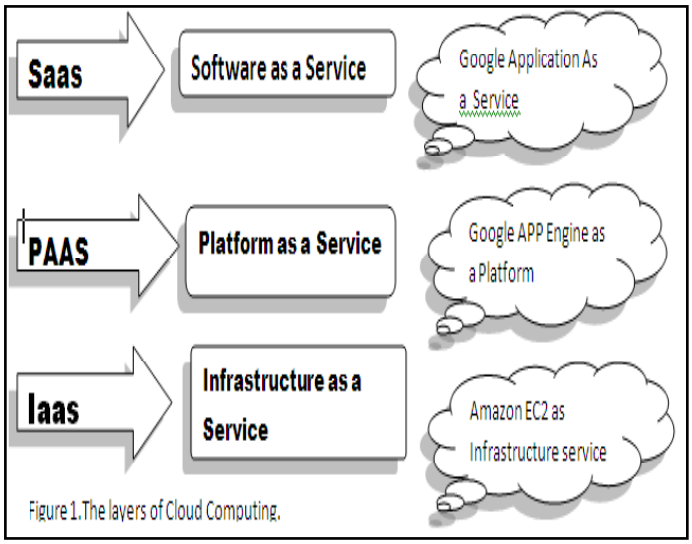


Fig. 3. The Layers of Cloud Computing

2. Platform as a Tune: (PaaS)

According to the user/programmer of a cloud computing tune is "programming an application will not be a job under any circumstances / influences, it will be done easily with the help of couple of friend in a very eco-friendly climate, in a long hard working weekend with PHP on a machine' .as we can understand, platform is nothing but an tune which provides a high level integrated environment to designing, building, testing, deploying and updating online custom application. But in this case, developers will need to require following some serious restriction on the type of software, they can write in exchange for built-in application scalability. Platform as tunes is used in various tunes but a typical example of platform as a tune.

1. Google's app Engine.
2. Another important example is SALES FORCE APEX LANGUAGE.
3. HADOOP development on the cloud is considered a cloud software environment.
4. Yahoo's system, may be viewed as an open-source implementation of the cloud computing.

3. Infrastructure as a Tune: (IaaS)

The main function of a infrastructure as a tune is that they offer hardware, software, and equipments which are mostly at the unified resources layer or part of a fabric layer, which mainly used for to deliver software application environments having resource usage-which is totally based on pricing copy. Infrastructure can scale up and down dynamically based on application resource needs. Scientists investigate cloud computing into "We are not programming a single machine, rather the World Wide Computer". It means infrastructure is as Tune.

Following is the popular commercial systems example of a infrastructure as a tunes:

- AMAZON"S Elastic compute cloud (EC2) AND
- Enomalism elastic computing infrastructure.

In this space, there are also vary academic open-source cloud projects, such as Eucalyptus.

Some examples of data storage systems are:

- Distributed file systems (e.g., GFS [10]),
- Replicated relational databases (RDBMS) and key-values.

In this respect, the cloud DaaS has inherited the different characteristics of today's data storage systems. Examples of commercial DaaS-systems are Amazon's S3 [10]. Above figure 1 shows the three layer architecture for cloud computing. Mostly tune provider uses these basic three levels for actual processing's. The concept of cloud computing can be easily understand with the use of these layers.

C. User Data Privacy Concerns in a Cloud Computing Environment

In a cloud computing environment, the equipment used forindustry operations can be leased from a single tuneprovider along with the application, and the related industrydata can be stored on equipment provided by the same tuneprovider. This type of arrangement can help a company save onhardware and software infrastructure costs, but storing thecompany's data on the tune provider's equipment raises thepossibility that important industry information may beimproperly disclosed to others.

Some researchers have suggested that user data stored on atune-provider's equipment must be encrypted [10].Encrypting data prior to storage is a common method of dataprotection, and tune providers may be able to build firewallsto ensure that the decryption keys associated with encrypteduser data are not disclosed to outsiders. However, if thedecryption key and the encrypted data are held by the sametune provider, it raises the possibility that high-leveladministrators within the tune provider would have access toboth the decryption key and the encrypted data, thus presentinga risk for the unauthorized disclosure of the user data.

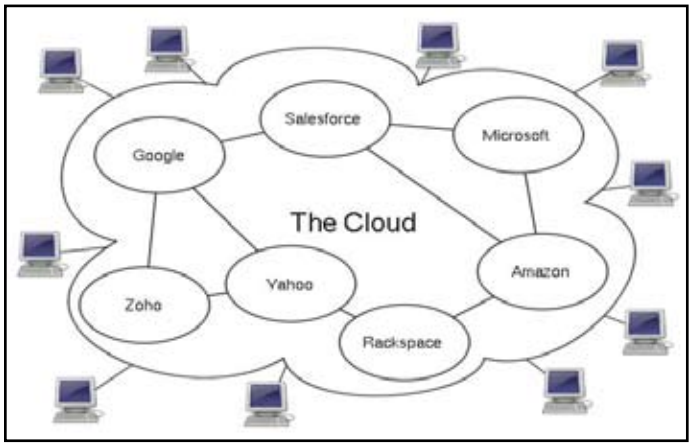


Fig. 4: Cloud Computing Environment

D. Existing Methods for Protecting Data Stored in a Cloudenvironment

Common data encryption methods include symmetric andasymmetric cryptography algorithms. Symmetric cryptography. Common methods for protecting user data includeencryption prior to storage, user authentication proceduresprior to storage or retrieval, and building secure channels fordata transmission. These protection methods normally requirecryptography algorithms and digital signature techniques, asexplained below:

Asymmetric cryptography requires morecomputation time and is used for the decryption keys requiredfor symmetric cryptography. The use of passwords as an authentication process is morefamiliar to general users, but messages sent by the user arevulnerable to surreptitious recording by hackers who can thenuse the data in the message to log into the tune as the user.

In more advanced authentication systems, the system side willgenerate a random number to send the user a challengemessage, requesting the user to transmit an encrypted responsemessage in reply to the challenge message, thus authenticatingthat the user has the correct encryption key.

This type of encryption and decryption process uses as a secret key. Asymmetric cryptography having two different keys-

- "public key" for encryption
- "Private Key" for decryption:

Examples include RSA cryptography and Elliptic Curve Cryptography (ECC). According to the user, "symmetric cryptography is more efficient, and is suitable for encrypting large amount of data. Asymmetric cryptography requires more computation time and is used for the decryption keys required for symmetric cryptography

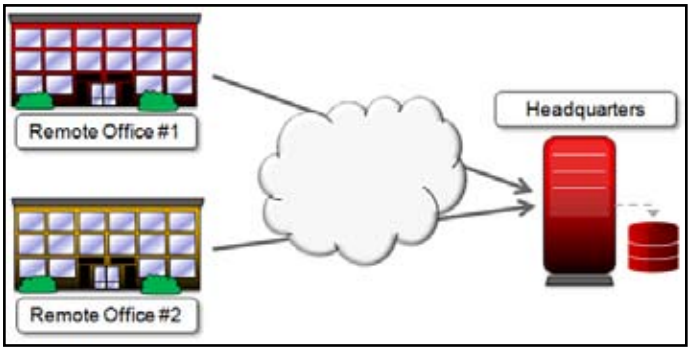


Fig. 5:

III. The Effective and Efficient Security Tunes for Cloud Computing

A. Foundation

As we already know about the cloud computing till yet. But now we will focus more on how the exact working of cloud computing undergoes for doing the encryption and decryption tune for data security and data integrity. This concept is fully and conveniently described in fig. 6.

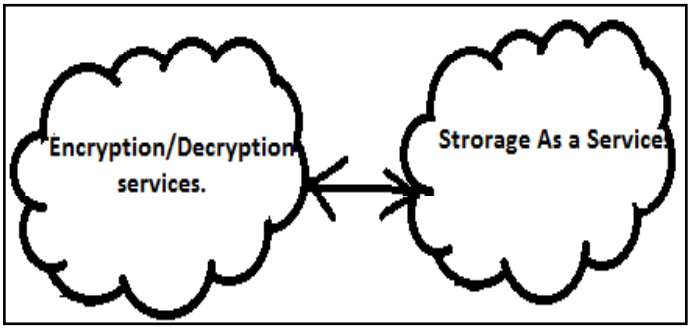


Fig. 6. Security Tunes For Cloud Computing

The concept is based on separating the storage andencryption/ decryption of user data, as shown in fig. 3. In thisindustrycopy, Encryption/Decryption as a Tune andStorage as a Tune (SaaS) are not provided by a singleoperator. In addition, the SaaS provider may not storeunencrypted user data and, once the provider of Encryption/Decryption as a Tune has finished encrypting the When the required data will get encrypted or decrypted depending upon the user request, then the Encryption or Decryption Tune will first of all assign the respective result to the CRM application. But now the data which is sent to Encryption or Decryption Tunes for doing encryption or decryption is stored in that tune only. This will create a risk factor for getting leakage of data.

This provider will automatically delete the encrypted and decrypted data from the Encryption and Decryption Tune System. As here data will get stored in one place and gets encrypted in another place so due to this dividing authority data integrity is prevented. In that two functions say accountant and cashier are related to each other regarding providing funds. But these would not interact with each other. These two functions should be kept detachly for providing safety. As cashier won"t be able to do any frond in the billing provided by the accountant. In this manner we can efficiently and properly maintained our confidential data from getting leaked by someone. Here are some examples of effective cloud computing, Salesforce. CRM tune [11], SAP"s ERP tunes [12], etc. Data generated whileuser data and handed it off to an application (e.g. a CRMsystem), the encryption/decryption system must delete allencrypted and decrypted user data.

B. Data Retrieval of Cloud Computing Using Security Tune

Now we will focus on how user will do interaction with the CRM to encrypt and decrypt the data. For that purpose, users have to undergo the login procedure in order to do the encryption and decryption procedure as shown in fig. 4. The Data Retrieval Program is illustrated in fig. 4 and is elaborated below. By observing figure we will firstly understand the concept of data retrieving concept. As shown in the figure user will do login where the user's registration is securely verified through login verification or say a One-time Password.

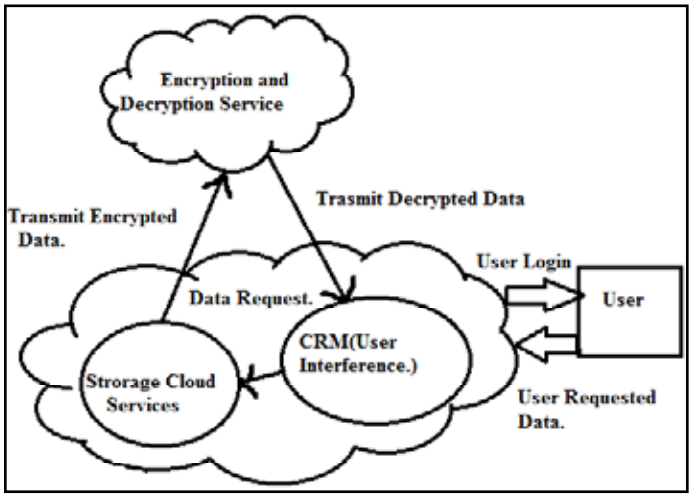


Fig. 7: Data Retrieval Diagram

After this authentication process is completed and user had been successfully completed the login procedure, he or she will send the request for the data retrieval to the CRM. Then the CRM will send the user ID to the Storage system. By sending that Id, it becomes convenient for the storage system to found the data which exactly user wants to retrieve. But here the data is stored in the encrypted form. So it is not readable by the user or say client. Hence, this encrypted data is then transmitted to the Encryption and Decryption by the Storage System with the user ID. In our cloud computing tunes there are n number of users or

say multiuser who are performing the encryption and decryption which creates complexity for the CRM, storage systems which data specifically user requires. As the data is stored on the large manner in the form of tokens. So for identifying that we require a unique user ID which helps us out to fulfil the user requirement to secure their confidential data.

C. Data Storage System

Now we will understand the concept of how the data should get stored in the storage system. The Data Storage System diagram is as shown in figure 5. Here also we require the three cloud tune systems which seem to mainly focus on storage system. It has following some implementing steps.

Step 1. As per the figure 5 sending the request to store the data which is then acquire by CRM system.

Step 2. Then the CRM system and Encryption/Decryption Tunes established the security path to transmit user ID and data which is have to be store.

Step 3. The Encryption/Decryption Tune then involves in conversion of both user ID and Data with use of encryption key which mainly used to encrypt the received data. Finally data can be store successfully. Data Storage System is an actually exactly reversed process of Data Retrieval System.

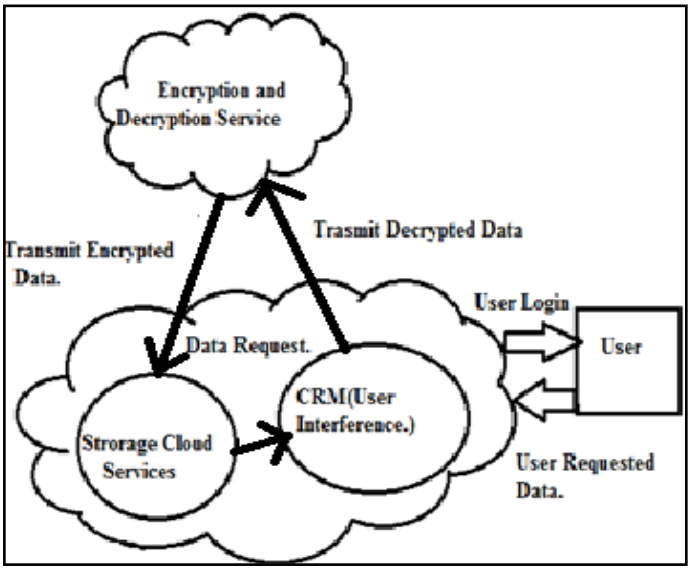


Fig. 8: Data Storage Diagram

IV. Proposed Algorithm

A. Elliptic Curve Cryptography Algorithm (ECC)

Public-key cryptography is based on the intractability of certain mathematical problems. Previously public key systems are secure considering two or more large prime factors. It is difficult to factor a large integer. For elliptic-curve-based protocols, it is considered that finding the discrete algorithm of a random elliptic curve must be feasible. The determination of size of the elliptic curve is difficult of problem. It is assumed that the smaller elliptic curve group provides the same level of security afforded by an RSA related system including large modulus can be achieved.

The storage and transmission requirement can be reduced due to small groups. To make a use of ECC every one has to agree with all the elements of elliptic curve which are known as domain parameter. Here p is declaring as prime case and the binary cases are the pair of m and f. The constant a and b used in defining equation is known as elliptic curve. The cyclic subgroup is called as G which is a abbreviation of generator. Generator is a aka base point, it is a non negative number ncryptographic function, n is an integer. In cryptographic applications this number h, called the cofactor, must be small () and, preferably, h = 1.

Step1. Key Generation Algorithm

Choose two different large random prime numbers p and q

Compute n = p q, where n is used as the modulus for both the public and private keys which is used to produce security.

Compute the totient: phi (n) = (p! 1) (q! 1).

Choose an integer e such that 1 <e < phi (n), and e and phi (n), have to share factor 1 where e is known as the public key exponent

Compute d to satisfy this relation d × e = 1 modulus phi (n); where d is kept as the private key exponent,

The public key is (n, e) and the private key is (n, d). Keep all the values d, p, q and phi secret.

Step2. Encryption

Sender A does the following:-

Obtains the recipient B's public key (n, e) for the process of encryption.

Represents the plaintext message as a positive integer m.

Computes the cipher text c = me mod n.

Sends the cipher text c to B.

Step 3. Decryption

Recipient B does the following:-

Uses his private key (n, d) to compute m = cd mod n for security purpose.

Extracts the plaintext from the message representative m.

B. Recommended Tune Level Agreement Content

The above-mentioned example has multiple tuneoperators coordinating to provide a CRM Cloud Tune. Thedata handling flow and cooperation among operators will affectthe effectiveness with which users use the tune. Unlikeconventional Tune Level Agreements (SLA), any SLAbetween the user and the tune provider must consider therights and obligations of the collaborating operators, andoperators should sign contracts between themselves to establishthe division of responsibilities and cooperation copy forproviding common tunes to clients.

The proposed example of a CRM Cloud Tune includes template for a multi-party SLA for the user, CRM operator,encryption/ decryption tune operator, storage tuneoperator.

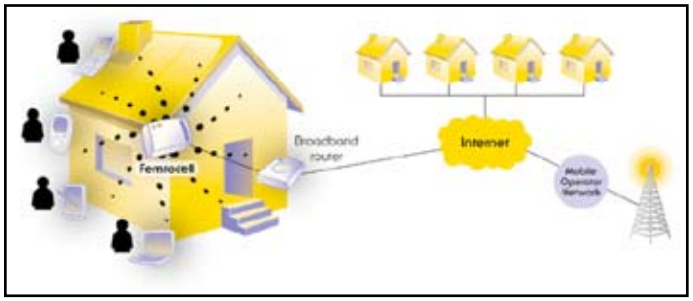
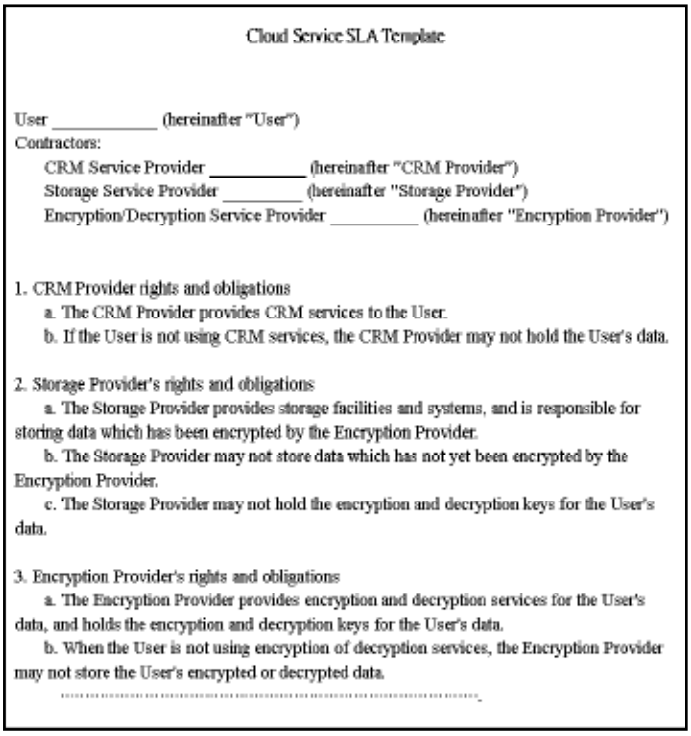


Fig. 9: Level Agreement Content

In the new industrycopy, multiple cloud tune operatorsjointly serve their clients through existing informationtechnologies including various application systems such asERP, accounting software, portfolio selection and financialoperations which may require the user ID to be combined withother IDs for indexing stored or retrieved data. In addition, theforegoing description of the two systems can use Web Tunerelated technology to achieve

operational synergies and dataexchange goals. These technologies can consider openinternational standards including the World Wide WebConsortium's (W3C) published Web Tune, UDDI, WSDLand SOAP standard documentation.



Cloud Service SLA Template

User _____ (hereinafter "User")
Contractors:
CRM Service Provider _____ (hereinafter "CRM Provider")
Storage Service Provider _____ (hereinafter "Storage Provider")
Encryption/Decryption Service Provider _____ (hereinafter "Encryption Provider")

1. CRM Provider rights and obligations
a. The CRM Provider provides CRM services to the User.
b. If the User is not using CRM services, the CRM Provider may not hold the User's data.

2. Storage Provider's rights and obligations
a. The Storage Provider provides storage facilities and systems, and is responsible for storing data which has been encrypted by the Encryption Provider.
b. The Storage Provider may not store data which has not yet been encrypted by the Encryption Provider.
c. The Storage Provider may not hold the encryption and decryption keys for the User's data.

3. Encryption Provider's rights and obligations
a. The Encryption Provider provides encryption and decryption services for the User's data, and holds the encryption and decryption keys for the User's data.
b. When the User is not using encryption of decryption services, the Encryption Provider may not store the User's encrypted or decrypted data.

Fig. 10: Cloudtunes SLA Template (Based on policies to ensure data privacy)

V. Conclusion and Future Work

The Basic methods include the Storage as Tune provider includes storing user data which has already been encrypted through an Encryption/Decryption Tune System. But does not allow this tune provider to the Decrypted Key or allow for the storage of decrypted data. We are trying to provide the best security ways for data leakage and data integrity. Cloud computing has a low-cost tunes to provide the possibility, while there are a large number of manufacturers and establisher behind core concept of cloud computing, here is no doubt that cloud computing has a bright future. But among all above the scenario, security and data integrity are the very vital aspect which has to be in deep considerations. Because user used to put his private data on cloud and expects that his data is in the secured condition. So, for the Projects, it is very important to overcome the user demands and try to enhance them.

This paper mainly concern with the Data Security and a Data Integrity issue which provides user satisfaction for his secrete data. We are providing here all the possibilities of Data security and Data Integrity using data Encryption/Decryption methods includingTo the user,cloud computing virtualizes resources and, to access tunes,the user only requires a means of accessing the Internet, e.g., asmart phone or PDA, or even a Smart Card or other activesmart chip, thus reducing purchasing and maintenance costs forsoftware and hardware. Because key industrial data is stored onthe tune provider's equipment, the tune provider mustprotect the user's data, for example by encrypting the user'sdata prior to storage. However, this leaves the tuneprovider's high-privilege internal staff (e.g., systemadministrators) with access to both the Decryption Key and theuser's encrypted data, exposing the user's data to risk ofpotential disclosure.For cloud computing to spread, users must have a highlevel of trust in the methods by which tune providers protecttheir data. This study proposes aIndustryCopy for CloudComputing Based on a Detach Encryption and DecryptionTune, emphasizing that authorization for the storage andencryption/decryption of user data must be vested with twodifferent tune providers. The privileges of Storage as Tuneprovider include storing user data which has already beenencrypted through an Encryption/Decryption Tune System,

References

[1] N. Hawthorn,"Finding security in the cloud", Computer Fraud & Security, Vol. 2009, Issue 10, pp. 19-20, October 2009.

[2] Salesforce.com, Inc.,"Force.com platform", Retrieved Dec. 2009, [Online] Available: http://www.salesforce.com/tw/

[3] Eoin Gleeson,"Computing industry set for a shocking change", Apr 2009, Money Week. "Draft NIST Working Definition of Cloud Computing", 2009.

[4] Quality of tune: [Online] Available: http://osun.org/ http://www.sciencedirect.com/

[5] Amazon EC2 and S3, [Online] Available: http://aws.amazon.com/ Cloud computing: [Online] Available: http://www.springerlink.com

[6] Sales force Customer Relationships Management (CRM) system, [Online] Available: http://www.salesforce.com/

[7] Enomalism elastic, [Online] Available: http://www.enomaly.com. Computing infrastructure, [Online] Available: http://www.springerlink.com

[8] Eucalyptus systems, [Online] Available: http://eucalyptus.cs.ucsb.edu!.

[9] "Amazon simple storage tune", [Online] Available: http://aws.amazon.comls3/. [Online] Available: http://www.salesforce.com/tw/

[10] M. Baker, R. Buyya, D. Laforenza,"Grids and grid technologies for wide-area distributed computing", International Journal of Software:Practice and Experience, Vol. 32, pp. 1437-1466, 2002.

[11] B. R. Kandukuri, V, R. Paturi, A. Rakshit,"Cloud security issues", in Proceedings of the 2009 IEEE International Conference on Tunes Computing, pp. 517-520, September 2009.

[12] R. Sterritt,"Autonomic computing", Innovations in Systems and Software Engineering", Vol. 1, No. 1, Springer, pp. 79-88. 2005.

[13] R. Buyya, C. S. Yeo, S. Venugopal, J. Broberg, I. Brandic, "Cloud computing and emerging IT platforms: vision, hype, and reality for delivering computing as the 5th utility," Future Generation Computer Systems, Vol. 25, Issue 6, pp. 599-616, June 2008.

[14] L. M. Vaquero,L. Rodero-Merino,J. Caceres, M. Lindner, "A break in the clouds: towards a cloud definition", ACM SIGCOMM Computer Communication Review, Vol. 39, No. 1, pp. 50-55, January 2009.

[15] C. Weinhardt, A. Anandasivam, B. Blau, N. Borissov, T. Meinl, W.Michalk, J. Stößer,"Cloud computing – a classification, industrycopys, and research directions", Industry& Information Systems Engineering (BISE), Vol. 1, No. 5, pp. 391-399, 2009.

[16] A. Weiss,"Computing in the clouds", net Worker, Vol. 11, No. 4, pp. 1625, December 2007.

[17] A. Parakh, S. Kak,"Online data storage using implicit security", Information Sciences, Vol. 179, Issue 19, pp. 3323-3333, September 2009.

[18] R. Rivest, A. Shamir, L. Adleman,"A method for obtaining digital signatures and public key cryptosystems", Communications of the ACM, Vol. 21, No. 2, pp.120-126, 1978.
[19] V. Miller,"Uses of elliptic curves in cryptography", Advances in Cryptology - CRYPTO '85, Lecture Notes in Computer Science, pp. 417-426, 1986.
[20] L. Lamport,"Password authentication with insecure communication", Communications of the ACM, Vol. 24, No. 11, pp. 770-772, 1981.
[21] A. Elgohary, T. S. Sobh, M. Zaki,"Design of an enhancement for SSL/TLS protocols", Computers & Security, Vol. 25, No. 4, pp. 297-306,June 2006.
[22] C. S. Yeo, S. Venugopal, X. Chu, R. Buyya,"Autonomic metered pricing for a utility computing tune", Future Generation Computer Systems, Vol. 26, Issue 8, pp. 1368-1380, October 2010.
[23] SAP AG.,"SAP tunes: maximize your success", Retrieved Jan. 2010, [Online] Available: http://www.sap.com/tunes/index.epx
[24] D. Benslimane, S. Dustdar, A. Sheth, "Tunes mashups: the new generation of web applications", IEEE Internet Computing, Vol. 12, No. 5, pp. 13–15, 2008.

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