



International Journal of Emerging Technologies in Computational and Applied Sciences (IJETCAS)

www.iasir.net

Cloud Establishment Scenario and Security Enhancement for Cloud Consumers and providers

¹Prof. Sapna Choudhary, ²Hina Koushar
¹HOD CSE (M.Tech.),

^{1,2} Rajiv Gandhi Technical University, Bhopal, Madhya Pradesh, India
(B7 Mahakaushal Puram, Tilak College Road, Near Khairmai Mandir, Katni, Madhya Pradesh, India)

Abstract: This paper argues Cloud Establishment, security enhancement and flexibility in accessing of database of cloud network, it makes more secure of cloud consumers and its providers by implementing some new technology and software's in cloud network with the help of Microsoft Windows server 2k12 R2 edition as cloud server, Microsoft Exchange server and SNMP, ARP protocols with IMEI no Tracker software for Mobile and Tablet users for their data, mails and information's security reasons and centralized data base accessing in everywhere. For some basic security reasons on cloud service distributors and client ends. This paper helps to identifying the problems that need to be solved by each mode, namely (1) cloud providers, (2) cloud consumers, and (3) cloud brokers. And also prevent cloud network from public Common network attacks and hackers and makes a secure connection between cloud server and their client ends.

Keywords: Cloud establishment and security enhancement, Cloud providers, Cloud consumers, cloud brokers

I. Introduction

Cloud computing has recently reached popularity and developed into a major trend in IT. While industry has been pushing the Cloud research agenda at high pace, academia has only recently joined, as can be seen through the sharp rise in workshops and conferences focusing on Cloud Computing. Lately, these have brought out many peer-reviewed papers on aspects of cloud computing, and made a systematic review necessary, which analyses the research done and explains the resulting research agenda. We performed such a systematic review of all peer-reviewed academic research on cloud computing, and explain the technical challenges facing in this paper.

II. Literature Survey

There has been much discussion in industry as to what cloud computing actually means. The term cloud computing seems to originate from computer network diagrams that represent the internet as a cloud. Most of the major IT companies and market research firms such as IBM, Sun Microsystems, Gartner and Forrester research have produced whitepapers that attempt to define the meaning of this term. These discussions are mostly coming to an end and a common definition is starting to emerge.

1) Cloud provider: - A cloud providers are that provides customers storage or software services available via a private or public network. Usually it means that storage and software is available for access via internet. Companies like CISCO; INFOSYS etc. are provides cloud services.

2) Cloud consumer: - A cloud consumer is the entity that uses the services like soft ware, Platform, processing power etc provided by the cloud. Consumer demands for the services that are required for their work. According to their requirement the providers provides services to them.

3) Cloud Broker: - A cloud broker is the entity that helps in promotion of cloud services. A cloud broker is a third-party individual or business that acts as an intermediary between the purchaser of a cloud computing services and the sellers of that service. In general, a broker is someone who acts as an intermediary between two or more parties during negotiations. A cloud broker may also be granted the rights to negotiate contacts with cloud providers on behalf of the consumer.

The above characteristics apply to all clouds but each cloud provides users with services at a different level of abstraction, which is referred to as a service model.

III. Three Most Common Service Models

1) Software as a Service (SaaS): this is where users simply make use of a web-browser to access software that others have developed and offer as a service over the web. At the SaaS level, users do not have control or access to the underlying infrastructure being used to host the software. Google Docs4 is most popular examples that use the SaaS model of cloud computing.

2) Platform as a Service (PaaS): this is where applications are developed using a set of programming languages and tools that are supported by the PaaS provider. PaaS provides users with a high level of abstraction that

allows them to focus on developing their applications and not worry about the underlying infrastructure. Just like the SaaS model, users do not have control or access to the underlying infrastructure being used to host their applications at the PaaS level. Google App Engine and Microsoft Azure are popular PaaS examples.

3) Infrastructure as a Service (IaaS): this is where users acquire computing resources such as processing power, memory and storage from an IaaS provider and use the resources to deploy and run their applications. In contrast to the PaaS model, the IaaS model is a low level of abstraction that allows users to access the underlying infrastructure through the use of virtual machines. IaaS gives users more flexibility than PaaS as it allows the user to deploy any software stack on top of the operating system. However, flexibility comes with a cost and users are responsible for updating and patching the operating system at the IaaS level. Amazon Web Services is popular IaaS examples. This definition describes cloud computing as having five essential characteristics and three service models.

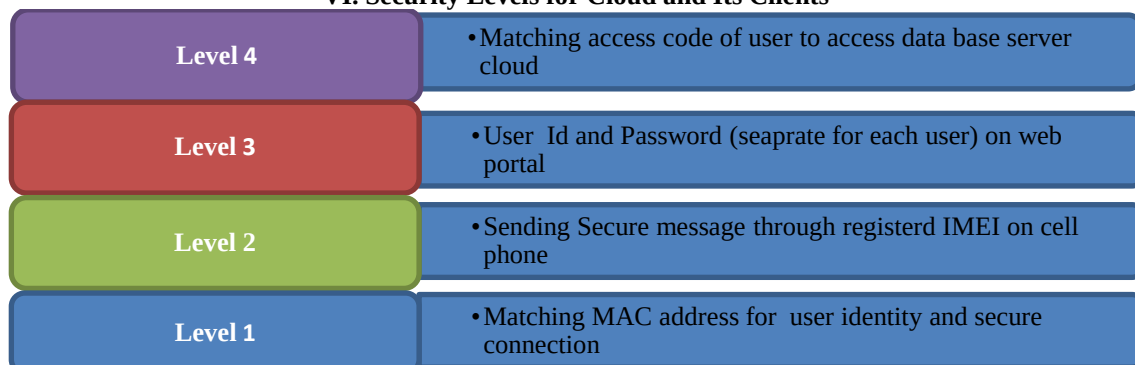
IV. Essential Characteristics

- On-demand self-service: computing resources can be acquired and used at anytime without the need for human interaction with cloud service providers. Computing resources include processing power, storage, virtual machines etc.
- Broad network access: the previously mentioned resources can be accessed over a network using heterogeneous devices such as laptops or mobiles phones.
- Resource pooling: cloud service providers pool their resources that are then shared by multiple users. This is referred to as *multi-tenancy* where for example a physical server may host several virtual machines belonging to different users.
- Rapid elasticity: a user can quickly acquire more resources from the cloud by scaling out. They can scale back in by releasing those resources once they are no longer required.
- Measured service: resource usage is metered using appropriate metrics such monitoring storage usage, CPU hours, bandwidth usage etc.

V. Scenario for Establishment of Cloud Connection

Security is like an achievement for cloud users and for their data centers, we incorporate many software's, techniques, hardware and tools for security reasons. Sometimes we do changes in our network topology and its infrastructure use many different operating systems and open source tools. But this paper serves some new techniques for securing cloud environment and development of new techniques. We discovered four levels for cloud security.

VI. Security Levels for Cloud and Its Clients



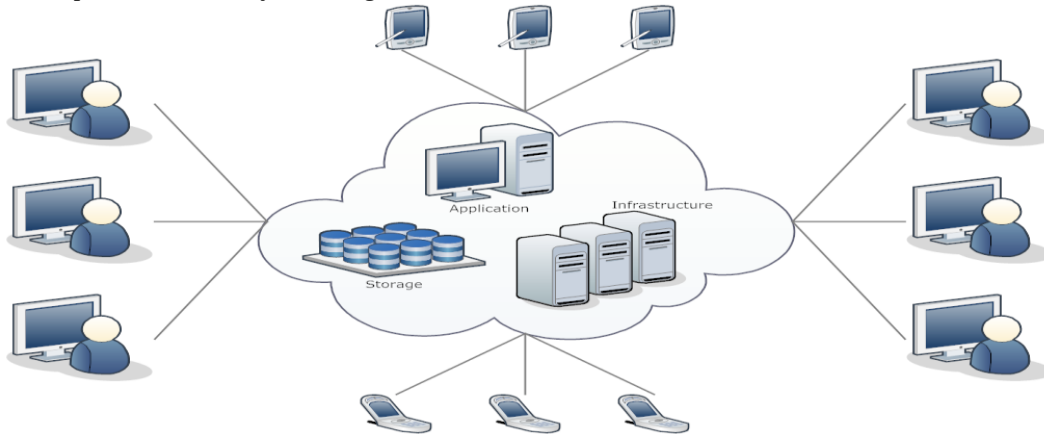
For making a secure connection with cloud user should follow all protocols which defines by cloud server which helps both of them for reliable services.

Level 1:- The initial process for connecting the database. When the user tries to communicate the cloud server, first the server will check the registered Mac address of client pc through access control list on server and their routers. mac address is the best option for addressing user identity. It plays an important role for a secure connecting process. After confirming the Mac address further process will come in to play.

Level 2:- After completion of the first process the next part in the security check is the identification of IMEI number. Server will check the IMEI number of the user that was given to the server during registration process. When this process ends the cloud server will send an access code on the user cell phone to establish a secure connection to the cloud center through a text message. IMEI number is a very useful option because it is a unique universally. That terminates the level 2 of the identification process.

Level 3:- level 3 begins after getting the access code. With the access code identification the server will open cloud web portal, then user will type their unique user ID and password. After confirming the desired content the process will switch to the level 4.

Level 4:- level 4 is the last phase of security checking and connectivity process. In this process, the server is expecting the unique access code that was provided by the server in beginning of the process (level 4). After getting the access code user will get connected to cloud server and database center. With termination of the level the whole process of security checking will ends.



VII. Programs and Tools Used in Security Levels

Cloud server required a Microsoft windows server 2k12 (2012) R2 edition operating system with updated Microsoft windows service pack 2 for windows server 2k12. active directory feature will help cloud admin and users to deploy services .and to check all the levels of security on both ends.

- 1) SNMP (Simple Network Management Protocol) is used for tracking the location of information packets which are transmitting between user and cloud's ends.
- 2) ARP (Address Resolution Protocol) and RARP (Reverse Address Resolution Protocol) are used for locating host and its network in public network.
- 3) MSPY software is used to send and receive IMEI number information and access code to the cloud server and host. The IMEI number is a common identifier in all GSM phones. This includes smartphones like iPhone, Samsung Galaxy, BlackBerry, HTC and Nokia Lumia among others. IMEI is a unique number that identifies your phone in the GSM network. This in turn lets you or your cell phone operator traces it. All these protocols and tools are used in Microsoft Windows server 2k12 R2 edition on cloud data centers.

VIII. Conclusion

As cloud computing is becoming popular day by day, concerns are about the security issues introduced through adoption of this new techniques and model. Cloud computing offers many benefits, but it also gives a chance to threats and data robbers. According to delivery services and its models, essential features of the cloud computing are SaaS, PaaS, and IaaS, data security is the prime aspect of cloud computing. Cloud storage is a service in which data is maintained, managed and backed up remotely and make available to users everywhere. There are three types of main problems in Cloud Computing, including Data Storage Security, flexibility and mobility. In this paper we discussed on cloud establishment, enhancement and data security in cloud network which is very essential for cloud consumers, cloud brokers and cloud providers. The main goal is to securely store and manage data. To ensure the correctness of users' data in cloud data storage, and correctness of users who can access to the cloud server, we proposed an effective and flexible distributed scheme with some security techniques.

IX. References

- [1]. A Secure Framework for User Data Storage in Public Cloud Systems using Symmetric Cryptography Reetika Singh, Rajesh Tiwari Department of Computer Science & Engineering, Shri Shankaracharya College of Engineering & Technology, Chhattisgarh Swami Vivekanand Technical University, Bhilai - 490006, Chhattisgarh, INDIA
- [2]. Cloud computing: state-of-the-art and research challenges Qi Zhang·Lu Cheng·Raouf Boutaba
- [3]. Cloud Computing – Issues, Research and Implementations, Mladen A. Vouk Department of Computer Science, North Carolina State University, Raleigh, North Carolina, USA.
- [4]. Cloud Computing and Emerging IT Platforms: Vision, Hype, and Reality for Delivering Computing as the 5th Utility, Rajkumar Buyya Chee Shin Yeo, Srikumar Venugopal, James Broberg, and Ivona Brandic, Grid Computing and Distributed Systems (GRIDS) Laboratory Department of Computer Science and Software Engineering The University of Melbourne, Australia.
- [5]. Cloud Computing Nariman Mirzaei (nmirzaei@indiana.edu) Fall 2008.
- [6]. FOSTER, I., ZHAO, Y., RAICU, I. and LU, S. 2008. Cloud Computing and Grid Computing 360-Degree Compared. In Grid Computing Environments Workshop (GCE '08), Austin, Texas, USA, November 2008, 1-10.
- [7]. Corbató, F. J., Saltzer, J. H., and Clingen, C. T. 1972. Multics: the first seven years. In Proceedings of the May 16-18, 1972, Spring Joint Computer Conference, Atlantic City, New Jersey, May 1972, 571-583.
- [8]. BUYYA, R., YEO, C. and VENUGOPAL, S. 2008. Market-Oriented Cloud Computing: Vision, Hype, and Reality for Delivering IT Services as Computing Utilities. In High Performance Computing and Communications, 2008. HPCC '08. 10th IEEE International Conference on, 5-13.

- [9] CHANG, M., HE, J., and E. Leon, "Service-Orientation in the Computing Infrastructure," 2006, pp. 27-33. SEDAYAO, J. 2008. Implementing and operating an internet scale distributed application using service oriented architecture principles and cloud computing infrastructure. In iiWAS '08: Proceedings of the 10th International Conference on Information Integration and Web-based Applications & Services, 417-421.
- [10]. Providing a Secure Data Forwarding in Cloud Storage System Using Threshold Proxy Re-Encryption Scheme. S.Poonkodi, V.Kavitha, K.Suresh, International Journal of Emerging Technology and Advanced Engineering Website: www.ijetae.com (ISSN 2250-2459 (Online), An ISO 9001:2008 Certified Journal, Volume 3, Special Issue 1, January 2013) International Conference on Information Systems and Computing (ICISC-2013), INDIA.
- [11]. Secure Framework for Data Storage from Single to Multi clouds in Cloud Networking, B.Sujana1, P.Tejaswini, G.Srinivasulu, Sk.Karimulla, QUBA COLLEGE OF ENGINEERING & TECH, NELLORE. International Journal of Emerging Trends & Technology in Computer Science (IJETTCS), Volume 2, Issue 2, March – April 2013 ISSN 2278-6856.
- [12] Implementation of Data Security in Cloud Computing G. Jai Arul Jose1, C. Sajeev, *International Journal of P2P Network Trends and Technology- July to Aug Issue 2011* ISSN: 2249-2615.
- [13] Design For Secure Data Sharing In A Cloud Storage Environment By Using Luby Transform Codes, Moulika Grandhi, B.Anantharaj, International Journal of Scientific and Research Publications, Volume 3, Issue 3, March 2013 1 ISSN 2250-3153.
- [14] A Secure Index Management Scheme for Providing Data Sharing in Cloud Storage Sun-Ho Lee and Im-Yeong Lee, J Inf Process Syst, Vol.9, No.2, June 2013 <http://dx.doi.org/10.3745/JIPS.2013.9.2.287> ,pISSN.1976-913X,eISSN.2092-805X.
- [15] Privacy Preserved Secure and Dependable Cloud Data Storage B.Dhivya, L.M.Nithya, International Journal of Computer Science and Management Research NCNICS 2013 Issue ISSN 2278-733X.
- [16] Cloud Security Issues, Balachandra Reddy, Kandukuri Ramakrishna, Paturi V, Dr. Atanu Rakshit *Advanced Software Technologies International Institute of Information Technology Pune, India*. 2009 IEEE International Conference on Services Computing.
- [17] An Analysis of Security Challenges in Cloud Computing Ms. Disha H. Parekh, *International Journal of Advanced Computer Science and Applications, Vol. 4, No.1, 2013*.
- [18] A Secure Cloud Storage System with Secure Data Forwarding Aarti P Pimpalkar, Prof. H.A. Hingoliwala, International Journal of Scientific & Engineering Research, Volume 4, Issue 6, June-2013 ISSN 2229-5518.
- [19] Secure Data Storage in Mobile Cloud Computing, Preeti Garg, Dr. Vineet Sharma, International Journal of Scientific & Engineering Research, Volume 4, Issue 4, April-2013 ISSN 2229-5518.
- [20] High Secure and Verification Mechanism for Cloud Storage, Lukka Ramesh Babu, Vemu Tulasi, IJAIR Vol. 2 Issue 7 ISSN: 2278-7844.
- [21] An Overview and Study of Security Issues & Challenges in Cloud Computing Rajesh Piplode Umesh Kumar Singh, Volume 2, Issue 9, September 2012 ISSN: 2277 128X International Journal of Advanced Research in Computer Science and Software Engineering.
- [22] Privacy - Preserving Audit of Secure Data Storage Services in Cloud Computing M.KANCHANA, C.PRAVEEN, Volume 3, Issue 5, May 2013 ISSN: 2277 128X International Journal of Advanced Research in Computer Science and Software Engineering.