

Analysis of Trusted Security of Cloud Computing System Entities

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Abstract

Cloud computing is one of the most important and emerging technologies among IT field in current era. Cloud grants users the way of sharing resources in distributed fashion and services, which reside to various organizations. Cloud computing is a heavy word, it's a service of computing, with the package of internet, which is powerful in the field of architecture. Cloud provides enormous services to users, which are universal in nature in comparison with the grid computing. Cloud is independent of location, service and software to systems and device is accomplished through shared servers. Major security services, which include encryption of data, confidentiality, integrity and authentication.

Keywords

Cloud Services, Security, Grid Computing, Trusted Cloud Platform

I. Introduction

Basically cloud computation is a network with high development and integration of TCP/IP network protocols through fast microprocessors, multi-level huge memory and high-speed network and reliable architecture. With no standard interconnection of protocols and nature of assembling data centre technologies, without all these cloud services couldn't have been a reality at all. Cloud is physical server machines or virtual machines. Cloud which are advanced in nature typically is the combination of gauge (computational) resource, for e.g., network devices, firewall and other security measures. Computing using cloud construe applications that can be extended. These applications use large data centres and most powerful available servers that can handle hosting of web applications and services. Anyone including a suitable Internet connection and a standard sustainable browser can access a cloud application. Cloud is a mere of virtualization of all available resources in computer era. Cloud is support bombastic, highly climbable programming model that allow workloads to recover from various unavoidable hardware and software. Cloud environment will support grid computing, as it's the advanced version by providing various physical and virtual servers.

This paper summarizes general characteristics and trusted security of cloud competing which will help the development and adoption of this rapidly evolving technologies. Provides a comprehensive analysis of all characteristics of cloud computational technologies. As cloud is a large mere of virtualization of resources which are easier to handle and access is globally.

II. Characteristics

Table 1: Characteristics comparison between Cloud and Grid Computing

Characteristics	Cloud Computing	Grid Computing
Service Oriented	Yes	Yes
Strong Fault Tolerant	Yes	Half
TCP/IP Based	Yes	Half
High Security	Half	Half
Loose Coupling	Yes	Half
Virtualization	Yes	Half
Ease Use	Yes	Half
Commercial Pattern	Yes	No

The comparative study characteristics of cloud computing and grid computing are listed in Table 1. The "Yes" and "No" stand for the special characters in respective fields. The "Half" stands for not owing all the characteristics to a certain extent. This paper particularly pays much of attention on the resemblance between then and only concentrates on the essential characteristics require to server the analysis needs.

A. Service Oriented Approach

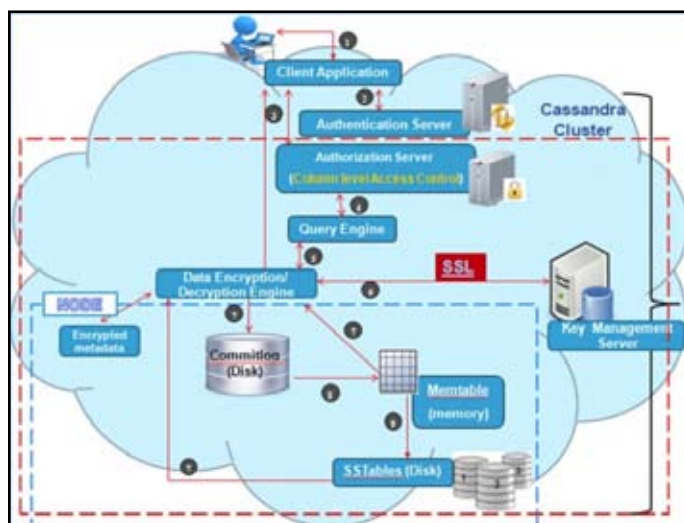


Fig.1: Cloud computing service-oriented approach

Service oriented approach is quite more practical than the concept of SOA (Service Oriented Architecture) in grid approach. In a service oriented environment has two major aspects, which are, accessibility and abstraction. With the help of virtualization and other techniques available, the architecture is abstracted without exposing much to user. Hence it is the obscurity to the cloud users. Abstraction reduces both, the need for cloud user to learn the detailed cloud architecture and the threshold of application development. During same period, the major elements of architecture are being simply accessed by cloud users. Users of cloud can use all capacity easily by exploring system parameters such as processing performance and storage capacity. Considering in general, as per type of provided capability, the cloud service is divided into 3 components SaaS (Software as a Service), PaaS (Platform as a Service), and IaaS (Infrastructure as a Service).

IaaS will deliver a huge computational data or resources based on the capacity of the storage, processing and network capacity. The best illustration is of Microsoft Azure service platform. SaaS aims at replacing the applications running on systems or personal computers. Instead of buying the software at a relative higher price the users can just pay as demand, by this total cost may be discounted. SaaS is an most attractive software performs excellent on cloud, but the network will play as this is a real time application, illustration is 3D online gaming.

B. Loose Coupling

This is a technique for fundamental cloud computing and deploys beyond the loose coupling mechanism of interaction application. With the use of virtualization concept, the logical and physical infrastructures are separated. The operation of one part hardly affects another part of the infrastructure.

C. Strong Fault Tolerance

Using parallel computing there are many fault tolerant methods. In the lowest level there is always exist some fault correction mechanisms with appropriate specific hardware. In the high-level more specific applications are applied keeping the specific algorithms in mind. In large parallel computational systems the interval of two files is shorter than application run time.

III. Security Trusted Using TCP/IP In Cloud Computational Systems

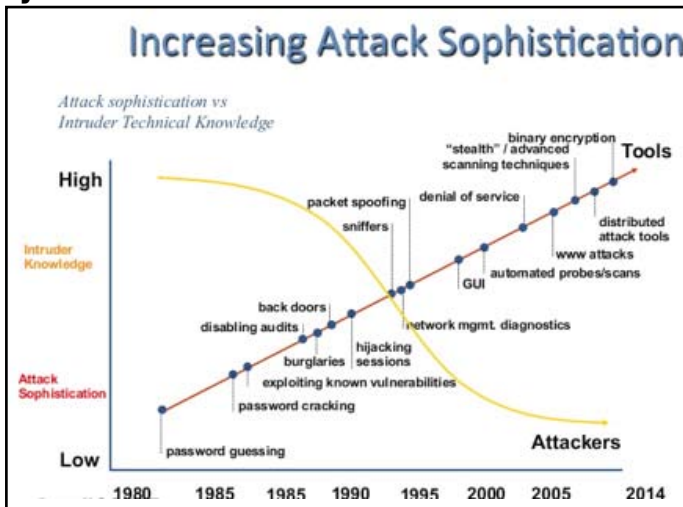


Fig. 2 : Analysis of cloud security V/S attacking

Mechanism of trust computing can make way that will help to establish a security environment. Originally model of trust computing is designed to make privacy and trust the personal available on the platform provided. As Internet nowadays is main computing form last century, the modelling of trusted computing is being developed to the network computing only when in distributed environment. The computing process in cloud data centre assures distributed model and will act accordingly as an important module of e-business or research.

IV. Security of Data in Cloud Based on TCP/IP

Having TCP, different entities will communicate the security route. TCP protocol will generate random numbers (keys) and will create session keys. Generated random numbers (keys) by physical hardware will bear the security characters much better than those generated just by software programs. Security communications

use the system in cloud to call TSS to use TPM. The TPM provides encryption and session numbers to communicators in cloud system. TPM has the capacity to burden few computation works from system and improve the performance. Important data stored in the system can be encrypted with the numbers generated by TPM. While accessing the data, user or application should authenticate themselves with TPM first, and the encryption number are stored in TPM, which makes hackers difficult to hack the encryption numbers. To secure the data integrity, the hashing function in TPM is used. TPM will check the critical data in regular prefixed interval to protect data integrity. Process of encryption and integrity check uses TSS to invoke the function of TPM.

V. Conclusion And Future Scope

Cloud computing technical field is difficult to understand but not impossible, it requires one to know and identify the fundamental characteristics. Understanding concepts and terminologies clear of the cloud computing helps but will not solve the problem completely of how to design, develop and adapt a cloud computing system. Ease of user experience characteristic helps cloud systems being widely used and adapted by non-computing experts. The characteristics put forth the essential of cloud system and development and adoption of these evolving technologies will benefit from this work. Analysed trusted computing in cloud computing environment and the function of trusted computing platform in cloud systems. Advantages of the proposed approach are to extent the trusted computing technology into cloud computing systems environment to achieve the trusted computing requirements for the cloud computing system and then fulfil the trusted cloud systems. TCP is used as hardware for the cloud system. In this design, TCP provides cloud system some important security functions, such authentication, communication security and data protection. TCP provides cloud systems a secure platform to achieve trusted computing. Future scope to access detail of each entity and trusted security measures especially the inner technologies and the valuation of cloud system services in interesting and valuable research subject. It will make the actual design more practical and operation in future.

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Author's Profile



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