Cross Cloud Computing in Security System

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Abstract— Cloud Computing has been information technologies services on developed to deliver demand to organizations like as individual users, this technology is still in its early stages of development because it suffers from different security threats that prevent users trust it In this paper, we identify different security problems existing in cloud from several research papers & we show suggested solutions. This cross cloud represents next logical wave in computing, enabling complex hybrid applications, cost & performance optimization, enhanced reliability, customer flexibility & lock-in avoidance. Providing testing as a service in cross clouds become hot topics in industry.

Keywords— Cross cloud computing, Cloud Server, Client server, Performance optimization, Security

I.INTRODUCTION

Cloud computing is a type of Internet-based computing that provides shared computer processing resources & data to computers & other devices on demand. This is a model for power on-demand somthing is a shared pool on configurable computing resources which could be reepid provisioned & released within minimal management effort. Cloud computing & storage solutions provide users & enterprises within various capabilities to store & process their data in either privately owned, or third-party data centers that might be located far from user–ranging in distance from across a city to across world. Cloud computing relies on sharing of personnel to provide stick together & low scale, similar to over same as public utility an electricity network.

Models of Cloud Server Deployment models define type of access to Cloud, Cloud could have any of four types of access: Public, Private, Hybrid, & Community. Public cloud allows systems & services to be easily accessible to general public. Public cloud might be less secure because of its openness. private cloud let something happen systems & services to be easily reached within an organization. It is more secured because of its private nature. Community cloud allows services to be accessible by a group of firm. hybrid cloud is a mixture of public & private cloud, in which critical activities are performed using private cloud while non-critical activities are performed using public cloud. Security in cloud computing has been a major concern. Data in cloud should be stored in encrypted form. To restrict client from accessing shared data directly, proxy & brokerage services should be employed. To deploying a special resource to cloud, one should need to analyze several aspects of resource such as: Select resource that needs to move to cloud & analyze its sensitivity to risk. Consider cloud service models such as IaaS, PaaS, & SaaS. These models require customer to be responsible for security at different levels of service.

II. LITERATURE REVIEW

Testing of Cloud Applications in Cross-Cloud Environment By S.K.Jameela, Dr. K.Thirupathi Rao

Cloud computing is new paradigm to deliver all hosted services over internet on demand. Ultimate goal of cloud computing paradigm is to realize computing as a utility. cloud is raepid adult towards its goal to support a wide specific of enterprise consumer services real-world applications. Recently a movement towards cross cloud also called as multi-clouds or inters clouds or cloud-of-clouds has emerged which take advantage of multiple independent cloud provider offers for cloud resilience & dependability.

Felix Cuadrado Research Challenges for Cross-Cloud Applications

Federated clouds could expose Internet as homogeneous compute fabric. There is an opportunity for developing cross-cloud applications that could be deployed pervasively over Internet, dynamically adapting their internal topology to their needs. In this paper we explore main challenges for fully realizing potential of cross-cloud applications. First, we focus on networking dimension of these applications. We evaluate what support is needed from infrastructure, & what are further implications of opening networking side. On a second part, we examine impact of a distributed deployment for applications, assessing implications from a management perspective, & how it affects delivery of quality of service & non-functional requirements.

Research Agenda in Cloud Technologies By Ilango Sriram

Cloud computing is latest effort in delivering computing resources as a service. It represents a shift away from computing as a product that is purchased, to computing as a service that is delivered to consumers over internet from large-scale data centres – or "cloud computing is gaining growing popularity in IT industry, academia appeared to be lagging behind rapid developments in field.

Cloud Computing Operations Research by Ilyas Yoob, Emrah Zarifoglu

This research argues that cloud computing industry faces many decision problems where operations research could add tremendous value. They provide an or perspective on cloud computing in three ways. First, we compare cloud computing process within traditional pull supply chain & introduce *Cloud IT Supply Chain* as system of moving information from suppliers to consumers through cloud network. Second, based on this analogy, we organize cloud computing decision space by identifying problems that need to be solved by each player in supply chain.

Cloud Computing Platforms & Applications By Santosh Kumar & R.H. Goudar

Cloud computing is development of parallel computing, distributed computing, grid computing & virtualization technologies which define shape of a new era. Cloud computing is an emerging model of business computing. In this paper, we explore concept of cloud architecture & compares cloud computing within grid computing.

III. SOCKET PROGRAMMING

The endpoint in an inter process communication is called a socket, or a network socket for disambiguation. Since most communication between computers is based on Internet Protocol, an almost equivalent term is *Internet socket*. Data transmission between two sockets is organized by communications porotocols, usually implemented in operating system of participating computers. Application programs write to and read from these sockets. Therefore, network programming is essential for socket programming.

A. Client Server Model

It is possible for two network applications to begin simultaneously, but it is impractical to require it. Therefore, it makes sense to design communicating network applications to perform complementary network operations in sequence, rather than simultaneously. server executes first & waits to receive; client executes second & sends first network packet to server. After initial contact, either client or server is capable of sending & receiving data.

B. Internet Protocol Version 4

IP4 addresses are 32 bits long. They are expressed commonly in what is known as dotted decimal notation. Each of four bytes which makes up 32 address are expressed as an integer value (0 – 255) & separated by a dot. For example, 138.23.44.2 is an example of an IP4 address in dotted decimal notation. There are conversion functions which convert a 32 bit address into a dotted decimal string & vice versa. Often times though IP address is represented by a domain name, for example, hill.ucr.edu. Several functions described later would allow you to convert from one form to another (Magic provided by DNS!).The importance of IP addresses follows from fact that each host on Internet has a unique IP address. Thus, although Internet is made up of many networks of networks within many different types of architectures & transport mediums, it is IP address which provides a cohesive structure so that at least theoretically, (there are routing issues involved as well), any two hosts on Internet could communicate within each other.

IV.CRYPTOGRAPHY

It had been discipline of information security had been called Cryptography. Meaning of Cryptography had been been "hidden" imitative from Greek kryptos. Cryptography means hide information within storage or transfer including methods such as microdots, integration of words within image.

Cryptography had been process of altering plaintext (ordinary text, just as letter) using process encryption into cipher text using procedure decryption. This procedure had been used to secure communication between two parties within occurrence of third party.

A. Basic Algorithm & Terminology

RSA encryption & decryption are mathematical operations. These are exponentiation, modulo particular number. So RSA keys consist of numbers involved within it calculation, as follows:

1. Public key consists of modulus & public exponent;
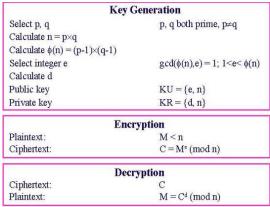2. Private key is consisting same modulus plus private exponent.

Key Generation	
Select p, q	p, q both prime, p≠q
Calculate $n = p \times q$	
Calculate $\phi(n) = (p-1) \times (q-1)$	
Select integer e	$gcd(\phi(n),e) = 1;\ 1 < e < \phi(n)$
Calculate d	
Public key	$KU = \{e, n\}$
Private key	$KR = \{d, n\}$

Encryption	
Plaintext:	$M < n$
Ciphertext:	$C = M^e \pmod n$

Decryption	
Ciphertext:	C
Plaintext:	$M = C^d \pmod n$

Fig. *1* Generation of key within encryption and decryption

V.CONCLUSIONS

Cloud computing relies on sharing of resources to achieve coherence & economy of scale, similar to a utility (like electricity grid) over an electricity network. Advocates claim that cloud computing allows companies to ignore up-front infrastructure costs. This research is implementing cross cloud computing in order to share data & study of security threats to existing cross cloud network. Here we make Comparative study of existing security mechanism. We have also make investigation of limitation of cryptographic techniques. This research focuses on Development of application program interface using java based network programming to Integrate security to cross cloud network by customized cryptographic techniques.

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