IMPACT OF CLOUD COMPUTING IN PRESENT SCENARIO

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ABSTRACT

Trends from the past five years indicate that more and more businesses , Even big and small, around the world are adopting the cloud Computing Technology, albeit in various models (public, private, hybrid), and this trend seems to be only increasing day by day. Cloud Computing is here to stay as the new business model of the IT landscape. It is slowly but surely making deep inroads into the corporate and Social environments and from 2014 onwards, considered to become the dominant platform for IT.

I. INTRODUCTION

In the last decade, most people were concerned about obtaining computers in their offices, schools and homes. The main reason behind that was to get close to the world and communicate and exchange data via these devices. In contrast, today people are concerned about the Internet and its speed for effective and efficient communication. In addition, often they need extra services to the existing legacy service provided by the Internet. These services are known as some kinds of computing tasks that are delivered by the Internet Service Providers (ISP). While getting required service is the users' demand, with the advanced development of the Internet tools around the world, attackers also aim to identify various loopholes in the operating system and networks. When we talk about Clouds, the main target of the attackers is to make illegitimate and unlawful attack to the available resources in the Cloud computing settings. In order to overcome these obstacles, some actions need be taken in the host based (HB) and network based (NB) level. Even though the use of intrusion detection system (IDS) is not guaranteed and cannot be considered as complete defense, we believe it can play a significant role in the Cloud security architecture [1]. Some organizations are using the intrusion detection system (IDS) for both Host Based and Network Based in the Cloud computing [2]. Intrusion detection systems (IDS) which are hardware and/or software mechanisms that detect and log inappropriate, incorrect, or anomalous activities and report these for further investigations [3]. Intrusion Prevention Systems (IPS), which contain IDS functionality but more sophisticated systems that are capable of taking immediate action in order to prevent or reduce the malicious behavior [4]. Thus, this work utilizes both systems: (IDS) and (IPS) and refers to it as Intrusion Detection and Prevention System (IDPS). Furthermore, many works have been done in using one of the (IDS) techniques; either Anomaly Detection (AD) or Signature based Detection or hybrid of both. The ADS (Anomaly Detection System) can be used to detect unknown attacks in the networks which come from rogue nodes. In fact, such system is designed for the offline analysis due to their expensive Processing and memory storage. On the other hand, the SD is used in this system to detect and identify manually the attack signature which is known as attacks in the real time traffic [5]. Therefore, both methods are essential in

detecting the intrusions. So, we propose an integrated scheme which makes use of both methods to detect the attacks as soon as possible and prevent the attackers from generating the malicious activities inside the Cloud.

II. CLOUD COMPUTING

Cloud computing refers to the provision of computational resources on demand via a computer network Users or clients can submit a task, such as word processing, to the service provider, such as Google, without actually possessing the required software or hardware. The consumer's computer may contain very little software or data (perhaps a minimal operating system and web browser only), serving as little more than a display terminal connected to the Internet. Since the Cloud is the underlying delivery mechanism, Cloud based applications and services may support.

Any type of software application or service in use today [6]. The essential characteristics of Cloud Computing include [7]: 1.On-demand self-service that enables users to consume computing capabilities (e.g., applications, server time, and network storage) as and when required. 2. Resource pooling that allows combining computing resources (e.g., hardware, software, processing, network bandwidth) to serve multiple consumers - such resources being dynamically assigned. 3. Rapid elasticity and scalability that allow functionalities and resources to be rapidly and automatically provisioned and scaled. 4. Measured provision to optimize resource allocation and to provide a metering capability to determine usage for billing purposes Extension to existing hardware and application resources, thus, reducing the cost of additional resource provisioning.

Cloud computing comprises of two different services components for the users namely as software and hardware over the Internet .However , there are various Cloud service delivery models that are developed, which can be divided into three layers [8] depending on the type of resources provided by the Cloud, distinct layers can be defined (see Figure 2). The bottom-most layer provides basic infrastructure components such as CPUs, memory, and storage, and is henceforth often denoted as Infrastructure as a Service (**IaaS**). Amazon's Elastic Compute Cloud (EC2) is a prominent example for an IaaS offer. On top of IaaS, more platform-oriented services allow the usage of hosting environments tailored to a specific need. Google App Engine is an example for a Web platform as a service (**PaaS**) which enables to deploy and dynamically scale Python and Java based Web applications. Finally, the top-most layer provides the users with ready to use applications also known as Software as a Service (**SaaS**) [8] [9].

Cloud Computing has become a scalable services consumption and delivery platform in the field of Services Computing. The technical foundations of Cloud Computing include Service-Oriented Architecture (SOA) and Virtualizations of hardware and software. The goal of Cloud Computing is to share resources among the cloud service consumers, cloud partners, and cloud vendors in the cloud value chain. The resource sharing at various levels results in various cloud offerings such as infrastructure cloud (e.g., hardware, IT infrastructure management), software cloud (e.g. SaaS focusing on middleware as a service, or traditional CRM as a service), application cloud (e.g., Application as a Service, UML modeling tools as a service, social network as a service), and business cloud (e.g., business process as a service).

Cloud computing means that instead of all the computer hardware and software you're using sitting on your desktop, or somewhere inside your company's network, it's provided for you as a service by another company and accessed over the Internet, usually in a completely seamless way. Exactly where the hardware and software

is located and how it all works doesn't matter to you, the user—it's just somewhere up in the nebulous "cloud" that the Internet represents.

Cloud computing is a buzzword that means different things to different people. For some, it's just another way of describing IT (information technology) "outsourcing"; others use it to mean any computing service provided over the Internet or a similar network; and some define it as any bought-in computer service you use that sits outside your firewall. However we define cloud computing, there's no doubt it makes most sense when we stop talking about abstract definitions and look at some simple, real examples—so let's do just that.

Preparing documents over the Net is a newer example of cloud computing. Simply log on to a web-based service such as Google Documents and you can create a document, spreadsheet, presentation, or whatever you like using Web-based software. Instead of typing your words into a program like Microsoft Word or OpenOffice, running on your computer, you're using similar software running on a PC at one of Google's world-wide data centers

III. TYPES OF CLOUD COMPUTING

IT people talk about three different kinds of cloud computing, where different services are being provided for you. Note that there's a certain amount of vagueness about how these things are defined and some overlap between them.

Infrastructure as a Service (IaaS) means you're buying access to raw computing hardware over the Net, such as servers or storage. Since you buy what you need and pay-as-you-go, this is often referred to as utility computing. Ordinary web

- hosting is a simple example of IaaS: you pay a monthly subscription or a per-megabyte/gigabyte fee to have a hosting company serve up files for your website from their servers.
- Software as a Service (SaaS) means you use a complete application running on someone else's system. Web-based email and Google Documents are perhaps the best-known examples. Zoho is another well-known SaaS provider offering a variety of office applications online.
- Platform as a Service (PaaS) means you develop applications using Web-based tools so they run on systems software and hardware provided by another company. So, for example, you might develop your own ecommerce website but have the whole thing, including the shopping cart, checkout, and payment mechanism running on a merchant's server. Force.com (from salesforce.com) and the Google App Engine are examples of PaaS.

3.1 Advantages

The Advantage of cloud computing are obvious and compelling. If your business is selling books or repairing shoes, why get involved in the nitty gritty of buying and maintaining a complex computer system? If you run an insurance office, do you really want your sales agents wasting time running anti-virus software, upgrading word-processors, or worrying about hard-drive crashes? Do you really want them cluttering your expensive computers with their personal emails, illegally sharedMP3 files, and naughty YouTube videos—when you could leave that responsibility to someone else? Cloud computing allows you to buy in only the services you want, when you want them, cutting the upfront capital costs of computers and peripherals. You avoid equipment

going out of date and other familiar IT problems like ensuring system security and reliability. You can add extra services (or take them away) at a moment's notice as your business needs change. It's really quick and easy to add new applications or services to your business without waiting weeks or months for the new computer (and its software) to arrive.

Trends from the past five years indicate that more and more businesses , Even big and small, around the world are adopting the cloud Computing Technology, albeit in various models (public, private, hybrid), and this trend seems to be only increasing day by day. Cloud Computing is here to stay as the new business model of the IT landscape. It is slowly but surely making deep inroads into the corporate and Social environments and from 2014 onwards, considered to become the dominant platform for IT.

3.2 Cloud Computing Growth

Virtualization, the technology backbone of cloud computing, coupled with high speed Internet and advent of service providers with data centers across the world has brought about a significant growth in this business model. According to survey, cloud computing's growth potential can be gauged by the fact that by 2020 it would be worth a huge 157 billion pound industry. The capabilities and benefits offered by the cloud are now being incorporated into the overall business strategy of organizations and not limited to only delivering efficiencies and cost savings. However, security, privacy, compliance and data protection still figure as prominent issues to cloud computing adoption.

3.3 80% of IT Executives are Positive about Cloud Computing Technology

For IT Industries (organizations) despite its challenges and inhibitors, cloud Computing is viewed as a positive development for IT organizations. Recent surveys have indicated that globally, four out of five respondents feel that the cloud will have a positive impact on their organizations. Today, the cloud Computing occupies a significant place in the IT market and is growing rapidly. IT leaders in the developing markets around the world see more benefit on the innovative potential and transformational nature that the cloud Computing offers, whereas the developed market considers cost savings from Cloud Computing Technology.

3.4 IT Workforce will Increase as a Result of Cloud Computing

Today, it can be safely argued that the greater use of cloud computing services in organizations will NOT marginalize IT departments. On the contrary, the role and responsibilities of IT will rather increase in the future. One thing looks certain and that is, with the emergence of cloud computing, the fundamental relationship between IT departments and their supported businesses will change within organizations. IT departments along with business groups and third party providers will need to collaborate and form an integral relationship. Also, on its part, IT will need to step up to meet all new challenges due to this alliance, while maintaining existing infrastructure and operations.

3.5 IT Roles will Change

This just about serves as a wake-up call for IT departments in all organizations to align more to the needs of the organization's business. What becomes clear is that the IT and Business will work together to shape ITs consumption together for the future. IT will probably act as a broker, intermediary and orchestrator of cloud services for the business across internal and external clouds.

3.6 Broader Set of Skills

The cloud computing today plays an important role in all aspects of the IT industries. The feature of Cloud Computing such as rapid provisioning, scalability, business continuity, on demand self-service, resource pooling along with security, risk management, compliance, and identity and access management in the cloud Computing .Now require IT professionals to develop a broader set of skills. Besides, expertise in virtualization, service oriented architecture (SOA), storage and networking skills are being sought after in many organizations, more so, ones that are implementing or planning to implement the Infrastructure-as-a-Service model (IAAS).And another IT professional is software Engineer ,Should Implement Software As A Service(SAAs).

3.7 7 Million Additional Jobs

The impact of cloud computing on IT professionals can be imagined by the lack of such specific expertise and skills available today in Cloud Computing Technology. There is a growing need for IT professionals who can architect, develop/deploy, migrate, support and integrate cloud solutions. Surveys predict that by 2016, there would be 7 million additional jobs available in the cloud computing market.

In conclusion, it can be stated that there is a distinct but positive transformation in the IT sector of all organizations due to the impact of the cloud computing. The earlier apprehensions of loss of IT and other related jobs have been dispelled, yet security and privacy still pose major challenges and threats to cloud adoption. However the advantages and benefits of the cloud far outweigh the issues confronting it. In the forthcoming decade it is forecasted that the traditional computing will slowly give way to cloud computing and that we will start seeing more of the “SaaS,PaaS,IaaS” paradigms.

3.8 Developing Cloud Computing Skills will Become a Necessity

On the job front, IT professionals would need to develop additional skills and expertise to handle the new aspects of the cloud. Also, new devices like Smartphone’s and technologies such as social media, “Bring Your Own Device” (BYOD), Big Data and Analytics would only propel new jobs in the coming years. Virtualization and cloud security experts, especially, would be rewarded by lucrative jobs. Nevertheless, developing cloud skills will become a necessity and those who plan early to adapt to this new environment will have the option and luxury to select from a range of promising jobs.

3.9 How Cloud Computing is Impact Everyday Life

Cloud computing is changing our lives in many ways. While the technology has been described and commented on at length technically, Cloud Computing Technology focus on its impact on **everyday life**. I, as never before, seeing cloud technology impact our world on many levels. I want to reflect on the effects of these systemic changes to our lives.

3.10 Social Impact

It has never been as easy to look out for long forgotten friends and classmates with the explosion of social networks and websites proposing ways to connect and relate through online communities. Facebook is of course a primary example.

Public figures and politicians, too, are now turning to engines such as Twitter to get a feel of the community and convey their views while bearing the pressure and influence from the groups they are looking at leading.

Taking advantage of developments in cloud technology and the social media space has allowed these different actors access to *sophisticated analytical* abilities. As an example of that, businesses are now increasingly using data from *social media* platforms in combination with *cloud*-based information resources to get better insights on potential services, innovations and customer requirements.

IV. EDUCATION

Educational institutions have been quick to realize the advantages of Cloud Computing technology and have been eagerly adopting it for several reasons, including:

- Ability for the students to access data anywhere, anytime, to enroll in online classes and to participate in group activities
- The value of combining business automation processes to streamline subscription, class enrollments and assignment tracking, thus reducing expenses significantly
- Ability for the institutional body to leverage the storage cloud to store the daily 2.5 quintillion bytes of data securely and without the need to cater to a complicated infrastructure
- The benefit of process billing and charging for education and non-education related activities

  While these are probably most obvious in a mature and developed market, cloud computing technology also offers benefits to students from developing countries. Access is now instantly available and in many instances free thanks to the proliferation of websites dispensing educational material and cloud knowledge-sharing communities. A simple internet connection can go a long way.

V. DEVELOPMENT

Cloud Computing technology also offers other benefits to developing countries since they no longer have the burden of investing in costly infrastructures and can tap into data and applications that are readily available in the cloud(Example:-salesforce.com). I briefly mentioned the education sector above, but the same applies to other areas, such as banking, agriculture, health and science.

Take as an example the telecom industry, whereby these developing countries have been fast embracing the smart mobile technology that accelerated development by leaping over the traditional wire and copper infrastructure.

VI. HEALTH

There are many reasons why using Cloud Computing technology in the healthcare industry is gaining pace. Some examples include: managing non-siloed patient data and sharing it among different parties such as medical professionals or patients checking their own status and treatment follow-ups; reducing operational costs such as data storage; accessing this data through pervasive devices such as mobile phones and going beyond the traditional intranet; implementing a quick solution in a secure environment that is compliant with the Health Insurance Portability and Accountability Act regulations.

While there may be challenges in integrating old or current tools with new technologies and the corresponding level of services, the benefits will outweigh the inhibition to move to the cloud. According to the industry, healthcare will be a growing market in the coming years, running into the billions.

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