CLOUD COMPUTING AND ITS SECURITY : A BRIEF REVIEW

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Abstract

Cloud computing provides a reliable, customized and low-cost services across various applications. This paper has focused on architecture of cloud computing and its security features. The application of various cloud models increases the efficiency and performance of the cloud environment as it can be customized based on user requirements. Various security features in cloud are discussed in detail.

Keywords : Data recovery, Virtualization, Cloud Computing, Security, Cloud Service provider

I INTRODUCTION

Cloud computing stores the data and programs on the Internet. Internet is transformed into cloud in a layman's term. We represent Internet as cloud in our computer network as depicted below.
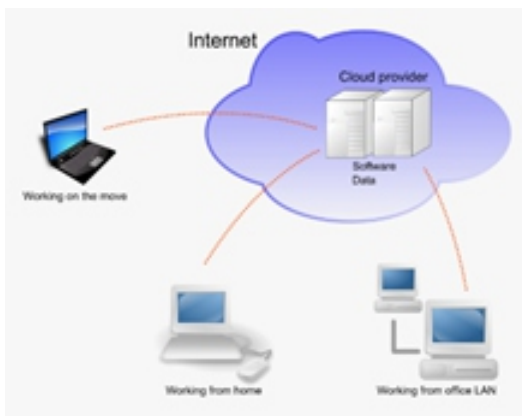
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Cloud is basically a software model and computer infrastructure to allow universal access to the shared pools of various sources of configuration, such as servers, computer networks, storage, services and applications. This could be provided quickly by managing the entire Internet [6].

The computer allows organizations and users with different computers to process and store any data needed to backup and process data in a specifically managed cloud or other server, usually located in data centers to make such data access methods in a reliable and efficient way. Companies can reduce or avoid infrastructure costs by using cloud computing. However, all third-party clouds will make different organizations not only to pay for software and infrastructure repairs, but also need to focus on their core business. Followers are known to want a claim on this cloud computing platform that allows businesses to make their systems work faster, with less maintenance and improved management at the same time, enabling IT teams to turn resources quickly to meet the ever-changing business demand.

In IT domain cloud computing has made a difference. The IT industry has been transformed due to its emergence. It's playing a major role in surge in infrastructure demand. Both hardware and software resources will be provided to the internet by cloud. Several cloud computing resources can be borrowed for a fee.

We can categorize the cloud under 3 types [2]:

1. Cloud(private)

It is for a given company or business. These organization often use open source privately.

2. Cloud (Public)

Companies like Google, Amazon and Microsoft are providing readily available cloud infrastructure. Organizations receive the entire infra from the public cloud companies. Millions of people share their services.

3. Hybrid cloud

When private and public cloud form together as Hybrid. Though they are mixed, each has its own identity.

Cloud Service providers in common

1. Google Cloud

Google provides online storage for its cloud computing in order to make its cloud services work. For instance, Google docs. many services can be viewed as cloud computing services. For example, Google Calendar Maps (et al.)

2. Apple(iCloud)

For back-up, storage and synchronization of data such as emails, calendar and contacts, iCloud is used. We can fetch the information from our devices.

3. Amazon Cloud Drive

Will be available in any music store when you buy MP3, and photos. Unlimited storage will be given in my Amazon prime. In fact, it is stored on any digital device which you buy in Amazon. The services and products are embedded within.

I. CLOUD-COMPUTING TECHNOLOGY

Cloud computing technology is more than a single tech, such as a microchip or mobile. Apparently cloud computing has become common in any tech organization for accessing IT-infra and services of both hardware and software. Organizations are enabled by cloud technology to use third party-managed services. The development of Cloud computing may be for research or business. It helps business operations to save on the software and hardware to function well [1].

II. CLOUD COMPUTING SERVICE MODELS

Following are the service models:

A) Infrastructure as a Service (IaaS):

Here, OS' memory CPU will be provided by CSPs. Software virtualization technology is used here. Virtual resources are converted into logical resources and released to customers based on their needs. AMAZON EC2, IBM and Google are providing of this type of services.

Advantage of IaaS Solution

- CAPEX reduction
- pay for the service by users
- availability of IT business resources and infrastructure.

B) Software as a Service (SaaS): In this type maintenance of OS, Application software and resources will be CSP's responsibility. Internet is used for delivering the service and this model is a web-based application interface through the Web browser [5].

SaaS' advantages

- Faster scale
- Available anywhere on the Internet
- Removes infrastructure concerns
- standard service delivery
- connected and basic adjustment

C) Platform as a Service (PaaS): this is a service which comprises both OS and other services of computing and an advanced type in cloud computing service, which is provided by CSPs. Both design and development and application process are included here. Also, it includes web service integrations, DB, security etc. Ownership and

management will be hassle-free. Microsoft Azure and Google App Engine are examples of PaaS.

Benefits of PaaS Solutions Community-development team will have been most advantageous since most of the people are building PaaS. Upgradation of their software infrastructure is not needed. Instead, the PaaS provider handles all upgrades, computations and standard software updates. There will be low risk for the Companies.

III. Some of the Security Features of Cloud Computing.

A. Top of the Line-Perimeter Firewall
Firewalls usually check the source of the pack and their destination. Many other upgraded arrows include static packet checks, to approve or reject based on stability issues. Fire solution from Palto Alto network is an example of this type that checks the contents of the file package to evaluate the file type which helps in removing threats, which are most advanced.

B. Firewalls-Internal for the individual application
Internal attacks still pose a significant risk. Non-internal firewall infrastructure to is not safe for restricting access to sensitive data.

For instance, already used account of a user will provide the hackers to completely bypass the firewall in perimeter. Also, an angered employee who has the right account may try to take advantage of his access.

Hence, the internal firewall which separates the information can avoid the impact.

C. Data-to-rest encryption
Cloud infrastructure which has the encrypted data is safe and others can't access.
Encryption certainty can reduce the data theft risk and alert the customer rather giving way to hackers.

IV. CLOUD COMPUTING SECURITY CHALLENGES
Cloud computing in many ways, has given significant benefits to small businesses. But, not without its challenges, security related as well. following are few of the key challenges of cloud security and its adaptors [3].

A. Lack of control and visibility
Visibility loss in service and lack in associated controls of hybrid and public cloud could be problematic [4].
Transparency loss is a control loss with respect to data security and management of IT. When a company manages legacy infrastructure, level of control over management and administration will not be there while third party delivers the cloud services.

B. Downtime and data breach
Although, enterprise cloud services are more secure than legacy builds, with potential costs in the form of data breaches are upside. As we have both public and private cloud offerings, third-party providers should solve these types of issues. As a result, minimal control to business over how to handle the violations

C. Merchant lock-In
When a company completely relies on cloud and cloud platforms, it continues with the same third-party vendor by force just to maintain its capabilities. When a given critical business or application is locked to a single vendor, moving to a new vendor is a difficult decision. Apparently, the seller is provided with the delivery he needs to force the customer into a fake contract.

D. Some of the other potential threats:
external threats play an important role in causing security risks for cloud computing other than direct potential security risk of cloud services. A few of them are:
Person, in an Intermediate Attack: Data can be changed

while transmission by a third-party forms source to destination.

Dissemination of service distribution: DDoS are the attacks which try to knock off an offline service by flooding the service with heavy traffic.

V. CONCLUSION AND FUTURE WORK

In technology domain Cloud computing technology is evolving rapidly, and it expects swift changes in the IT field over the next few years. Cloud provides various services due to its nature of features. In this paper, we explored these features, services, applications and security features and issues. We are quite sure that many others will soon be recognized. Many companies prefer cloud services to evaluate the impact on their services. Apparently, concerns and risks are always present in the technology of cloud computing. Privacy and security are key concerns of cloud computing, putting a limitation to its acceptance practically. In addition, the focus of cloud computing is on developing different approaches where the security issues are addressed. In Our future work we would try to identify and address the security issues in cloud computing and propose a security framework that addresses security related threats to decrease the risks connected with cloud computing.

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