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A Survey Report on Cloud Computing Technology and its Usage

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Abstract*: This paper is the survey and concept of Cloud Computing technology and its usage. It is providing excellent facilities to business entrepreneurs by flexible infrastructure. Although, cloud computing is facilitating the Information Technology industry, the research and development in this arena is yet to be satisfactory. Our contribution in this paper is an advanced survey focusing on cloud computing concept and most Security issues.*

Keywords: *Cloud Computing; infrastructure; Data Center; Server and client.*

1. INTRODUCTION

Cloud computing is the delivery of computing services over the Internet. Cloud services allow individuals and businesses to use software and hardware that are Managed by third parties at remote locations. Examples of cloud services include online file storage, social networking sites, webmail, and online business applications. The cloud computing model allows access to information and computer resources from anywhere that a network connection is available. Cloud computing provides a shared pool of resources, including data storage space, networks, computer processing power, and specialized corporate and user applications**.** In other words

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployment models.

2. CHARACTERISTICS

The characteristics of cloud computing include on-demand self service, broad network access, resource pooling, rapid elasticity and measured service. On-demand self service means that customers (usually organizations) can request and

Manage their own computing resources. Broad network access allows services to be offered over the Internet or private networks. Pooled resources means that customers draw

From a pool of computing resources, usually in remote data centers. Services can be scaled larger or smaller; and use of a service is measured and customers are billed

Accordingly. Service models The cloud computing service models are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). In a Software as a Service model, a pre-made application, along with any required software, operating system,

Hardware and network are provided. In PaaS, an operating system, hardware, and network are provided, and the customer installs or develops its own software and applications. The IaaS model provides just the hardware and network; the customer

installs or develops its own operating systems, software and applications.

3. DEPLOYMENT OF CLOUD SERVICES

Cloud services are typically made available via a private cloud, community cloud, public cloud or hybrid cloud. Generally speaking, services provided by a public cloud are offered over the Internet and are owned and operated by a cloud provider. Some examples include

services aimed at the general public, such as online photo storage services, e-mail services, or social networking sites. However, services for enterprises can also be offered in a public cloud.

In a private cloud, the cloud infrastructure is operated solely for a specific organization, and is managed by the organization or a third party.

In a community cloud, the service is shared by several organizations and made available only to those groups. The infrastructure may be owned and operated by the organizations or by a cloud service provider.

A hybrid cloud is a combination of different methods of resource pooling (for example, combining public and community clouds).

4. WHAT MAKES CLOUD COMPUTING DIFFERENT?

It's managed:-Most importantly, the service you use is provided by someone else and managed on your behalf. If you're using Google Documents, you don't have to worry about buying umpteen licenses for word-processing software or keeping them up-to-date. Nor do you have to worry about viruses that might affect your computer or about backing up the files you create. Google does all that for you. One basic principle of cloud computing is that you no longer need to worry how the service you're buying is provided: with Web-based services, you simply concentrate on whatever your job is and leave the problem of providing dependable computing to someone else.

It's "on-demand":- Cloud services are available on-demand and often bought on a "pay-as-you go" or subscription basis. So you typically buy cloud computing the same way you'd buy electricity, telephone services, or Internet access from a utility company. Sometimes cloud computing is free or paid-for in other ways (Hotmail is subsidized by advertising, for example). Just like electricity, you can buy as much or as little of a cloud computing service as you need from one day to the next. That's great if your needs vary unpredictably: it means you don't have to buy your own gigantic computer system and risks have it sitting there doing nothing.

Advantages of Cloud Computing: - Cloud computing offers numerous advantages both to end users and businesses of all sizes. The obvious huge advantage is that you no more have to support the infrastructure or have the knowledge necessary to develop and maintain the infrastructure, development environment or application, as were things up until recently. The burden has been lifted and someone else is taking care of all that. Business is now able to focus on their core business by outsourcing all the hassle of IT infrastructure.

Let’s visit some of the most important advantages of cloud computing and discuss them in more detail. Those will include both a company’s and an end-user’s perspective.

Cost Efficiency: -This is the biggest advantage of cloud computing, achieved by the elimination of the investment in stand-alone software or servers. By leveraging cloud’s capabilities, companies can save on licensing fees and at the same time eliminate overhead charges such as the cost of data storage, software updates, management etc.

The cloud is in general available at much cheaper rates than traditional approaches and can significantly lower the overall IT expenses. At the same time, convenient and scalable charging models have emerged (such as one-time-payment and pay-as-you-go), making the cloud even more attractive.

If you want to get more technical and analytical, cloud computing delivers a better cash flow by eliminating the capital expense (CAPEX) associated with developing and maintaining the server infrastructure.

Convenience and continuous availability: - Public clouds offer services that are available wherever the end user might be located. This approach enables easy access to information and accommodates the needs of users in different time zones and geographic locations. As a side benefit, collaboration booms since it is now easier than ever to access, view and modify shared documents and files.

Moreover, service uptime is in most cases guaranteed, providing in that way continuous availability of resources. The various cloud vendors typically use multiple servers for maximum redundancy. In case of system failure, alternative instances are automatically spawned on other machines.

Backup and Recovery: -The process of backing up and recovering data is simplified since those now reside on the cloud and not on a physical device. The various cloud providers offer reliable and flexible backup/recovery solutions. In some cases, the cloud itself is used solely as a backup repository of the data located in local computers.

Cloud is environmentally friendly: -The cloud is in general more efficient than the typical IT infrastructure and It takes fewer resources to compute, thus saving energy. For example, when servers are not used, the infrastructure normally scales down, freeing up resources and consuming less power. At any moment, only the resources that are truly needed are consumed by the system.

Scalability and Performance:-Scalability is a built-in feature for cloud deployments. Cloud instances are deployed automatically only when needed and as a result, you pay only for the applications and data storage you need. Hand in hand,

also comes elasticity, since clouds can be scaled to meet your changing IT system demands.

Regarding performance, the systems utilize distributed architectures which offer excellent speed of computations. Again, it is the provider's responsibility to ensure that your services run on cutting edge machinery. Instances can be added instantly for improved performance and customers have access to the total resources of the cloud's core hardware via their dashboards.

Increased Storage Capacity:-The cloud can accommodate and store much more data compared to a personal computer and in a way offers almost unlimited storage capacity. It eliminates worries about running out of storage space and at the same time It spares businesses the need to upgrade their computer hardware, further reducing the overall IT cost.

Device Diversity and Location Independence: - Cloud computing services can be accessed via a plethora of electronic devices that are able to have access to the internet. These devices include not only the traditional PCs, but also smart phones, tablets etc. With the cloud, the "Bring your own device" (BYOD) policy can be easily adopted; permitting employees to bring personally owned mobile devices to their workplace.

An end-user might decide not only which device to use, but also where to access the service from. There is no limitation of place and medium. We can access our applications and data anywhere in the world, making this method very attractive to people. Cloud computing is in that way especially appealing to international companies as it offers the flexibility for its employees to access company files wherever they are.

Disadvantages of Cloud Computing: -As made clear from the above, cloud computing is a tool that offers enormous benefits to its adopters. However, being a tool, it also comes with its set of problems and inefficiencies. Let's address the most significant ones.

Security and privacy in the Cloud:-Security is the biggest concern when it comes to cloud computing. By leveraging a remote cloud based infrastructure, a company essentially gives away private data and information, things that might be sensitive and confidential. It is then up to the cloud service provider to manage, protect and retain them, thus the provider's reliability is very critical. A company's existence might be put in jeopardy, so all possible alternatives should be explored before a decision. On the same note, even end users might feel uncomfortable surrendering their data to a third party. Similarly, privacy in the cloud is another huge issue. Companies and users have to trust their cloud service vendors that they will protect their data from unauthorized users. The various stories of data loss and password leakage in the media does not help to reassure some of the most concerned users.

5. 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 is 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 servers, cloud clients and cloud database. 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.

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