

AN OVERVIEW OF CLOUD COMPUTING AND AREA OF ITS APPLICATION

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ABSTRACT

To support a large number of users and elastic services, the internet service providers designed cloud computing. Over the years cloud computing has evolved to become the most preferred technology gaining a lot of adoption and employed by several organizations. This adoption has led to many companies' using the cloud for storage and processing of data. This paper explain what cloud computing is, cloud computing architecture and its areas of application.

Keywords— cloud computing, cloud implementation, cloud infrastructure

1 INTRODUCTION

Cloud computing is a new processing schema whereby computer processing is done on the internet and called 'cloud'.Users of the cloud need not be concerned about the processing details, since every process of the data is done in the cloud. This enables the user to remotely run their applications and also store data on the cloud without the burden of the local storage and installation of applications [7]. Users of the cloud are able to store large amounts of data in and use them as and when they require from any part of the world via terminal equipment [10].

Cloud computing provides an adjustable online environment that supports the volumes of work to be expanded without affecting the implementation of the framework.

2 CLOUD COMPUTING ARCHITECTURE

The architectural design of cloud computing is divided into four divisions; infrastructure, platform, data centre and application layer.

The data centre layer : The data centre, also called hardware layer, deals with handling and management of physical resources of the cloud. This includes the router, power-cooling systems and physical servers. The data centres contain lots of servers, hundreds to thousands that are interconnected through routers and switches.

A. Types of services in cloud computing

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Software as a service (SaaS): It provides the user with the capability to use on-demand applications running on cloud infrastructure over the internet. The user does not have control over the underlying framework.

Platform as a service (PaaS): This service provides deployment tools and hosting options for cloud clients to manage their own applications. Users of this service do not have control of, or access to, the underlying physical infrastructure used for their application.

Infrastructure as a service (IaaS): It focuses on the hardware infrastructure provisioned by the cloud service provider. This includes storage network, memory processors and various computing resources. The resources are provided through virtualization of the system through the internet. The cloud service providers have full control.

There are four deployment methods that can deploy cloud computing; hybrid cloud, community cloud, private cloud and public cloud.

Public cloud: Here, the cloud service provider (CSP) owns the infrastructure (5). The CSP provides public service in the

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vast majority of the cases on the internet based on pre-defined rules, policy and pricing model. The CSP manages the physical infrastructure which is located offsite. Amazon web services and Google Engine are well known examples. *Private cloud*: It's a cloud that is run and managed only for a single organisation. It's designed and initiated to prepare most of the gains of a public cloud only for that institution or organisation. The owner may or may not own the physical infrastructure and can be controlled by a third party or organization.

Hybrid cloud: It's an incorporation of two or more clouds; community, private, or public. All the clouds involved in the setup of this could keep their status of unique entity but share standardization or proprietary technology [9].

A. Characteristics of cloud computing Multi-tenancy: In cloud environment, a single case of a software application serves various customers who are referred to as tenants. They may be given the ability to customize some parts of the application but not the application code.

Broad network access: Resources in CSP may be accessed from a number of devices. The resources can also be accessed from different locations that offer online access through standard mechanisms like mobile phones, laptops, tablets and workstations that are connected to the network. *On demand self-service*: The clients can use the services they need when there is a desire without human interaction with the cloud service provider [8].

Rapid elasticity and scalability: Services in cloud computing can be provision elastically as well as rapidly. The user can scale up to additional available resources when there is a high demand, and later, may scale down the resources when the demand is down. The application can manually add a resource or can be set to scale automatically [1]. *Measured services*: Cloud computing system provides metering capacity to the type of services the user use by automatically checking and optimizing the resources used. *Shared resource pooling*. The computing resources of the cloud service provider are combined to serve different customers who use multi-tenant models. The resource

assigned to each user depends on the customer demand.

III APPLICATION OF CLOUD

Business and consumer application :

Some of the business management applications that are based on cloud computing are customer relationship management (CRM) and Enterprise resource planning (ERP). The method of deploying these services is software as a service. Cloud CRM application creates avenues for start ups and small organizations to be wholly functional CRM software is without huge cost and subscription fees. salesforce.com is one of the developed and popular CRM solutions today. This CRM provides customizable solutions that can be incorporated with features developed by third party [1]

Big data analysis :

Cloud computing permits data scientists to attain organizational information that permits them to get insight, forecast future disaster and help in decision-making based on the data. It won't be challenging to acquire and analyze data in real time. Some of the open source data tools that are based on the cloud like Hadoop, Cassandra, HPCC and so on are used by small companies.

Geoscience: Satellite Image Processing : Satellite image processing applications are used to collect, produce and analyze huge amounts of non spatial and geospatial data [1]. Cloud computing is an advancement for this kind of application for generating meaningful results. The satellite image sensing generates a lot of raw images. The processing of these data requires high computation power for both input and output. The large data can be transferred from local station on the ground to cloud computing facilities for extra processing. Cloud computing provides accurate infrastructure for this kind of services.

Productivity: Cloud-based applications are typically available through web browsers, and can be operated anywhere and anytime through internet connectivity. Productivity applications in the cloud perform tasks that are similar to what we usually do on our desktops.

IV CONCLUSION

There is a gradual shifting from conventional computing to cloud as users are getting acquainted with this technology. Cloud computing being new in the field of information and communication technology brings an evaluation paradigm which changes the way computing is done. Due to this technology developers won't spend large chunks of money to build software and hardware infrastructure capabilities. They may rather target effective provisioning of utility services.

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