

Chapter 78

Roof to Technology Implementation: The Adoption of Cloud Concept in Various Areas

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ABSTRACT

Cloud computing is an upcoming IT approach that presents various new economic benefits, effective rapid deployment of services to achieve ultimate benefits and goals. Cloud computing reveals an effective connection of internet and computing technologies with personal or business computing that is changing the environment of computing process by providing solutions which are designed, delivered and managed. This model is a remarkable shift from the traditional model of computing. The cloud is an attractive technology solution as it enables to reduce the total cost of ownership and giving “green computing” environment by energy saving concept. Use of Cloud computing technology in different areas provides greater opportunities in the overall development of world, especially India. This chapter throw lights on various dimensions in which cloud computing concept is used. This paper also reviews the potential and opportunities for cloud computing in the healthcare industry, tourism, defence and military applications and various another aspects.

INTRODUCTION

“Cloud” term is defined as the combination of the infrastructure of a data centre with the ability to provide facility of hardware and software.

Cloud computing refers to applications and services that run on a network which is distributed using the concept of virtualized resources and accessed by the common internet protocols and various networking standards. Cloud computing depicts the real paradigm shift/move in the way in which systems are deployed.

DOI: 10.4018/978-1-7998-5339-8.ch078

Roof to Technology Implementation

The massive scale of cloud computing (Singh et al., 2015) systems is enabled due to the large popularization of Internet and growth of large and small service companies. Cloud computing concept made a utility platform of providing various services and application in different arenas.

The cloud mainly works on two essential concepts:

1. **Abstraction:** Cloud computing abstracts the details of system implementation from developer and user. Also, data is stored in unknown location, applications run on unspecified physical systems; and access by user is ubiquitous.
2. **Virtualization:** Pooling and sharing of resources is done to implement the subject of virtualization in cloud computing. In this, infrastructure is centralized, costs are accessed on the metered basis, resources are scalable and multi-tenancy is enabled.

Cloud computing subject of abstraction is based on the concept of pooling the different physical resources and presenting them as virtual resources.

It is a new model which provides an efficient platform for provisioning resources for staging application and for platform independent user access to services. Cloud computing is a valuable concept as it helps to shift capital expenditures into operating expenditures. It also shifts the risk to cloud provider rather than to organization (Kalpana et al., 2017). This concept depicts the latest opportunities to users and developers as it is based on the footstep of a shared multi-tenant utility.

Applications implemented by cloud computing can be categorized into two ways:

1. **“Low Touch Applications”:** These have low margins and normally low risks.
2. **“High Touch Application”:** These have high margins which require committed resources and pose more risks.

The service/application that concentrates on the hardware follows the Infrastructure as a service (IaaS) e.g. Amazon Web services, the service/application concentrates on software stack (such as o/s) follows the software as a service (SaaS) model, e.g. Microsoft Window Azure, and the service/application concentrates on complete hardware/software/application stack, it follows the most refined and restrictive service (PaaS), e.g. Sales Force.com.

- **Benefits:** Various benefits of cloud computing includes Broad Network access, sharing and pooling of resources, on demand self service, measured and scalable service, rapid elasticity etc. It also helps to reduce the overall costs to enhance quality of service, increased reliability and outsourcing of IT management, to provide ease to utilization, to simplify maintenance and up-gradation.

CLOUD COMPUTING BACKGROUND

Cloud computing is a intelligent move of significant innovations in grid computing, virtualization, abstraction, utility computing process, elasticity, distributed computing . “Clouds, or clusters of distributed computers, provide on-demand resources and services over a network, usually the Internet, with the scale and reliability of a data centre” The U.S. National Institute of Standards and Technology (NIST) includes some other important aspects of cloud computing in its definition: “A model for enabling ubiquitous,

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