Chapter 112
Forecasting the Trends in Cloud Computing and its Impact on Future IT Business

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ABSTRACT

Cloud computing has become the cutting-edge technology for information technology processing and high-end computational tasks. Cloud has started playing its part in almost all business processes. Big data in cloud has become the buzzword. The business impact of cloud has deepened with the growth of big data analytics. Current trends such as green cloud computing, mobile cloud computing, and big data have created social as well as business impact. In this chapter, the authors analyze the field of cloud computing and perform an intense literature survey augmented with mathematical analysis. The forecast on the future of cloud and analysis of the current trends shows that cloud computing is a promising technology that will evolve further in years to come.

INTRODUCTION

Cloud computing is a technology that has evolved from Grid and distributed computing such that provisioning of resources can be done easily without much effort. The resources could be hardware, platform, software, application or any other computing resource. National Institute of Standards and Technology (NIST) (Mell & Grance, 2009) defines Cloud computing as 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 (Babu & Krishna, 2013a). Cloud is a collection of data centres and applications offered as services

on subscription basis (Mell & Grance, 2011). In general, cloud service models fall into three broad categories (Figure 1).

Infrastructure as a Service (Iaas): Service providers provide storage and computing power as a service. Computing power may be in the form of servers, processors, RAM etc. The details about infrastructure will be abstracted from the consumer/customer. The customers will feel as if these physical resources are installed and maintained in their own environment/corporate network. The elastic capability of IaaS makes on-demand provisioning possible. The infrastructure can be dynamically scaled up and down depending on the user requirements. Popular IaaS providers include Rackspace, GoGrid and ElasticHosts apart from many others.

Platform as a Service (Paas): Platform provides the base using which applications and software can be developed and maintained. The consumer just needs a web browser to create, test and deploy the developed applications. The infrastructure for the platform need not be always provided by the same cloud provider i.e., If Google is providing the platform, infrastructure might be provided by HP. Using PaaS to develop and deploy applications is much easier than the traditional software development. PaaS provides a set of software and development tools including run time environment for the developer (Tsai, Sun & Balasooriya, 2010). Prominent PaaS providers are AT &T, Teremark, Engine yard etc.

Software as a Service (SaaS): Software applications can be accessed via various client devices using an interface such as web browser. A lot of time can be saved by using this service model as the user need not install the software in his/her PC and new users can be added on the model very easily. SaaS is nowadays called also as on-demand software. The software is often shared by multiple

Figure 1. Cloud service model architecture
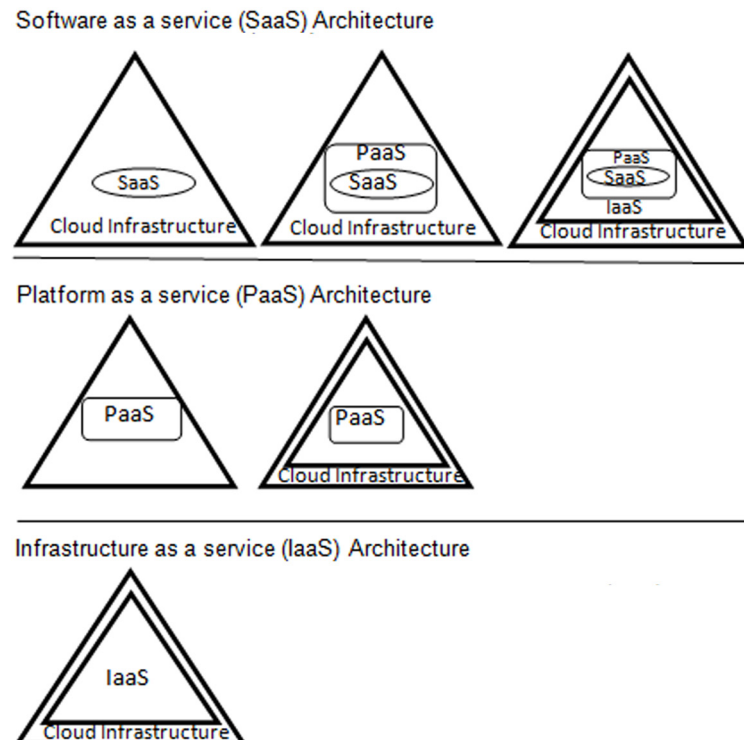
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