

Chapter 82

Cloud Computing in E–Governance: Indian Perspective

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ABSTRACT

Cloud Computing is becoming a rapidly accepted and deployed paradigm both by individuals and organizations alike. The government of various countries is also moving its services to cloud to offer better and just in time services to the users. This chapter explores the basic concepts of Cloud Computing, which includes the main features of Cloud Computing, the cloud deployment models, the services offered by the cloud, motivations behind adoption of cloud by organizations, in general and by the Government, in particular. We also lay an insight into the various Cloud Computing initiatives taken by the Government of India to facilitate its citizens with easy access to information/services.

INTRODUCTION

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This chapter explores the basic concepts of Cloud Computing, which includes the main features of Cloud Computing, the cloud deployment models, the services offered by the cloud, motivations behind adoption of cloud by organizations, in general and by the Government, in particular. We also lay an insight into the various Cloud Computing initiatives taken by the Government of India to facilitate its citizens with easy access to information/services.

DOI: 10.4018/978-1-7998-5339-8.ch082

CLOUD COMPUTING

The term Cloud Computing is becoming a common buzzword in the field of IT. Basically, Cloud is a collection of shared software, hardware and network resources. Cloud Computing involves sharing of various IT resources including the IT infrastructure and IT services over the internet. Many organizations are now breaking their nutshell and moving towards a vast collection of resources that are available to them on demand through the Cloud.

Cloud Computing has been defined differently by different researchers. Some of the definitions are as follows:

Cloud Computing has been coined as an umbrella term to describe a category of sophisticated on-demand computing services initially offered by commercial providers, such as Amazon, Google, and Microsoft. It denotes a model on which a computing infrastructure is viewed as a “cloud,” from which businesses and individuals access applications from anywhere in the world on demand (Buyya, Yeo, Venugopal, Broberg, & Brandic, 2009).

Buyya et al. (2009) have defined Cloud Computing as a “parallel and distributed computing system consisting of a collection of inter-connected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements (SLA) established through negotiation between the service provider and consumers.”

Vaquero et al. (2009) have stated “clouds are a large pool of easily usable and accessible virtualized resources (such as hardware, development platforms and/or services). These resources can be dynamically reconfigured to adjust to a variable load (scale), allowing also for an optimum resource utilization.

This pool of resources is typically exploited by a pay-per-use model in which guarantees are offered by the Infrastructure Provider by means of customized Service Level Agreements.”

Cloud Computing is aimed at allowing users with on demand access to large amount of computing power in a fully virtualized manner, by aggregating resources and offering a single system view.

Cloud Computing involves a service oriented architecture, reduced information technology overhead for the end-user, greater flexibility, reduced total cost of ownership, on demand services and many other things.

The basis of Cloud Computing is virtualization of resources.

The idea of virtualizing a computer system’s resources, including processors, memory, and I/O devices, has been well established for decades, aiming at improving sharing and utilization of computer systems. Hardware virtualization allows running multiple operating systems and software stacks on a single physical platform. Figure 1 depicts the concept of virtualization. a software layer, the virtual machine monitor (VMM), also called a hypervisor, mediates access to the physical hardware presenting to each guest operating system a virtual machine (VM), which is a set of virtual platform interfaces.

MOTIVATION FOR CLOUD COMPUTING

Cloud Computing has characteristic features which makes it more suitable & adoptable computing by consumers. Some of them are listed below:

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