

Chapter 77

Virtualization and Cloud Computing: Business Models in the Virtual Cloud

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ABSTRACT

This chapter explores the interface between virtualization and cloud computing for global enterprise mobility. It also investigates the potential both virtualization and cloud computing hold for global enterprises. In this context, it argues that the virtualization of computing operations, applications, and services and the consumerization of digital technologies serve as one of the key drivers of cloud computing. Against this backdrop, the chapter first provides an overview of virtualization, consumerization, and cloud computing. Second, it showcases real life instances in which five enterprises leverage virtualization and cloud computing as part of their cloud business solutions. Third, it outlines some of the hollows and pain points characterizing cloud computing. Fourth and last, the chapter briefly presents possible future trends likely to typify cloud computing.

INTRODUCTION

In the ever-evolving and rapidly expanding trajectory of the world of computing, virtualization and cloud computing have become irresistible buzz words attracting the attention of enterprises and consumers alike. Both these twin concepts and processes are at the cusp of revolutionizing the way conventional enterprise Internet and computing practices operate. By their very nature, these two cognate computing processes are disruptive and transformative, thereby necessitating enterprises to rearchitect and reconfigure themselves as next

generation virtual and cloud based organizations. In this way, enterprises that are willing to virtualize their computing architectures, services and activities in the cloud are likely to have a competitive differentiator and value added benefits over their rivals. This is particularly so for global enterprises leveraging mobility as part of their global business strategy. That is, for global enterprises cloud computing serves as a game changing force.

At the core of enterprise cloud computing, especially, is virtualization since the latter is one of the key enablers of cloud computing in general. So, for enterprises to be able to *cloud compute*

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their services and operations, they also need to virtualize those services and operations including aspects of their technologies (e.g., IT infrastructures, architectures, platforms and applications) from which those services and operations are deployed. Only then, can cloud computing have a requisite disruptive impact expected of it. An essential ingredient into the virtualization and cloud computing mix is consumerization. The latter serves as one of the main drivers for cloud computing and lends itself well as a touchstone that enterprises can use in determining how they can embrace cloud computing.

Based on the foregoing paragraphs, the following areas constitute the main discussion points of this chapter: virtualization, consumerization and cloud computing: an overview; tapping into virtualized clouds: business models in the clouds; hollows and pain points in the clouds; and future trends.

VIRTUALIZATION, CONSUMERIZATION, AND CLOUD COMPUTING: AN OVERVIEW

In the computing and Internet environment, virtualization has at least two related senses. Firstly, it refers to creating an unreal or a simulated replica of something such as a server, an application, an operating system, a storage device, a network resource, a help desk, or a piece of hardware (see Figure 1). Secondly, it is a computing technology allowing users to virtually utilize multiple devices, thereby eliminating the need for their physical deployment (see Gondaliya, 2010). In this sense, it embodies abstract computing platforms and applications (Jäättmäa, 2010) and signifies a shift from traditional siloed IT infrastructures and architectures to virtually distributed and shared ones.

For its part, consumerization is a dual value chain in which consumers or end users utilize digital devices and technologies (e.g., smartphones, iPads, instant messages, social networking sites,

microblogs, and virtual storages) in their private lives and end up employing the self-same devices and technologies for enterprise purposes. Put differently, it is a technology trajectory in which technologies with consumer-oriented offerings are embraced and harnessed by businesses for enterprise offerings. Known also as the consumerization of IT, this phenomenon results in the blurring of the classical line between personal and professional lives for employees. Moreover, as more employees *trend* towards adopting consumer technologies for business purposes, their behavioral practice in turn helps facilitate the consumerization of enterprise mobility (see Chaka, 2012; Signorini & Hochmuth, 2010).

Both virtualization and consumerization serve as key enablers of cloud computing in that they provide an enterprise milieu in which the latter can occur. That is, virtualized computing and IT infrastructures, architectures, platforms, applications, services, operations and functions that have a higher degree of consumer and enterprise uptake provide an ideal opportunity for cloud computing. The latter has generated a lot of buzz in the IT world and has also been a subject of myriad definitions. Hence, as suggested by Cloud Computing World [CCW] (2011a, 2011b), Hagel and Brown (2010), Jäättmäa (2010), Steele (2011) and Winans and Brown (2010), there is a plethora of opinions and theories as to what cloud computing is and is not. In this chapter, cloud computing is viewed as a process, a concept, a model and a metaphor. As a process it has evolved over time in the same way as technologies such as the Internet, the Web, web

Figure 1. A screenshot of a virtual keyboard and a real keyboard



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