

Chapter 8

A Practical Cloud Services Implementation Framework for E-Businesses

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ABSTRACT

Recent advancements in cloud computing has raised much interest in its adoption for e-businesses. However, there are many dimensions to the cloud that require a good understanding as well as a strategic planning before jumping into this cloud bandwagon.

This chapter proposes a strategic framework with practical guidelines for the key players, namely, cloud service providers, cloud architects, and consumers, which would facilitate in successful adoption of cloud-based service-oriented solutions for e-businesses. In this context, we discuss the security, privacy, and governance issues related to cloud implementations, as well as the possible benefits that cloud services could offer. Additionally, the various models and dimensions of the cloud that aid in the understanding and strategic planning of the cloud implementation in e-businesses are discussed. Underpinning these aspects is the proposed service-oriented strategic framework that provides a step-wise guideline for a successful cloud adoption exemplified with an e-business case.

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INTRODUCTION

Cloud services are being offered by numerous players from the information technology (IT) sector and these developments have recently triggered eagerness on the part of organizations to move their e-business operations into the cloud platform. Cloud computing is simply portrayed as a different way to architect and remotely manage computing resources with on-demand computing services offering huge potential for flexibility, scalability, and cost-saving of IT operations (Belmans & Lambrette, 2012). However, there are many perspectives to the cloud that require a deep understanding, and hence strategic planning is warranted for businesses moving towards the cloud paradigm. There are concerns related to privacy, security, control, and governance of the cloud, and since there is a lack of comprehensive implementation framework or guidelines that could integrate the requirements of all its key players, cloud computing is still in its infancy with respect to market adoption (NIST Report, 2011; Benson et al., 2010; Ramanathan & Venkatraman, 2010).

While much research has been focusing on the cloud computing capabilities and service provider offerings, there is comparatively less work that focuses on the management issues surrounding the complexities and risks of the cloud that impede its adoption (Bisong & Rahman, 2011). With the main aim of addressing this lacuna, this chapter explores the complex dimensions of cloud computing and proposes a systemic implementation framework with practical guidelines for the key players, namely, cloud service providers, cloud architects and consumers. Such a comprehensive framework that provides step-wise guidelines integrating the various players' viewpoints and addressing their concerns would benefit e-businesses pursuing cloud adoption and widens the scope for further research.

This chapter aims to provide the reader useful insights into various risks and benefits of different cloud models and thereby lays the platform for

a successful adoption of the proposed business strategic framework for cloud implementations. It is by no means intended to be a complete reference for cloud computing. Instead, the main purpose is to create a comprehensive understanding of the issues surrounding cloud adoption and to provide a business strategic framework that could act as a roadmap or guide for e-businesses venturing into cloud computing.

BACKGROUND

Cloud computing has become a buzzword in the information world today and it refers to data center hosting of hardware and systems software, with applications available as services over the Internet (Rodero-Merino et al., 2010; Reese, 2009). With the current era of terabytes of data processing and demand for real-time IT solutions to challenges of ever-dynamic business environment, an evolution from Web services to grid services and now towards cloud services is very much likely (Miller, 2008; Clayman et al., 2010). While both grid and cloud concepts have the main objective of providing access to high-end computational power, storage resources and software systems, more recently, the trends seem to shift from grid computing towards cloud computing. This is due to the additional capabilities that clouds adopt, such as virtualization for providing on-demand services that are capable of facilitating dynamic scalability and heterogeneity. Such features aid in achieving maximum utilization of resources with minimum costs (Buyya et al., 2009). However, the proliferation of cloud services among potential users is very slow and currently enterprises have just started seriously looking into cloud computing as a means to save cost (Vaquero et al., 2011). There are fears and concerns with regard to migration, transparency, security, and control that impede the adoption of cloud services among individual users, businesses, and government agencies (Bisong & Rahman, 2011). There is insufficient understanding of cloud computing risk implications to busi-

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