Chapter 49
A Case Study for Business Integration as a Service

Victor Chang
Leeds Metropolitan University, UK & University of Southampton, UK

ABSTRACT

This chapter presents Business Integration as a Service (BIaaS) to allow two services to work together in the Cloud to achieve a streamline process. The authors illustrate this integration using two services, Return on Investment (ROI) Measurement as a Service (RMaaS) and Risk Analysis as a Service (RAaaS), in the case study at the University of Southampton. The case study demonstrates the cost-savings and the risk analysis achieved, so two services can work as a single service. Advanced techniques are used to demonstrate statistical services and 3D Visualisation services under the remit of RMaaS and Monte Carlo Simulation as a Service behind the design of RAaaS. Computational results are presented with their implications discussed. Different types of risks associated with Cloud adoption can be calculated easily, rapidly, and accurately with the use of BIaaS. This case study confirms the benefits of BIaaS adoption, including cost reduction and improvements in efficiency and risk analysis. Implementation of BIaaS in other organisations is also discussed. Important data arising from the integration of RMaaS and RAaaS are useful for management and stakeholders of University of Southampton.

1. INTRODUCTION

Cloud Computing has become a buzz word and hot topic in academia and industry. There is an increasing number of organisations offering Cloud Computing products and services in industry. Amazon is a market leader in Public Cloud Computing and offers Elastic Compute Cloud (EC2) for computing capacity and Simple Storage Service (S3) for storage capacity. Microsoft provides Windows Azure services to allow developers to store their code and develop new applications for their clients or companies. Salesforce.com is a pioneer in Cloud Computing and offers their Customer Relation Management (CRM) applications to a large number of their users. Oracle offers several products and services ranging from hardware to application services after acquiring Sun Microsystems. IBM has Cloud Computing products and applications suites to help their customers. In addition, there are more Small and Medium Enterprises (SMEs) developing

DOI: 10.4018/978-1-4666-8473-7.ch049

and selling their Cloud Computing services and products. They offer different types of business models and perspective. Computing Clouds are commonly classified into Public Clouds, Private Clouds and Hybrid Clouds (Ambrust et al., 2009; Ahronovitz et al., 2010; Chang et al., 2010 a; 2010 b; 2010 c; 2012 a; 2012 b; 2013 a; 2013 b; 2013 c). The type of Cloud an organisation adopts will depend on its needs and the volumes and types of services and data they plan to have and use. The examples described above are public clouds. There are researchers describing the design, implementations and user evaluation of private clouds, where Chang et al (2012 a; 2012 b; 2012 c; 2013 a; 2013 b; 2013 c) and Chang (2013 a; 2013 b; 2013 c; 2013 d; 2013 e) demonstrate the effectiveness of their implementations and positive impacts to organisations that adopt Private Clouds, including the technical demonstrations, results, discussions and positive impacts.

Academia also acknowledge the benefits of adopting Cloud Computing, particularly in operational management in scalability of data centre resources, cost saving, improvement in efficiency, green IT and agility to complete tasks (Foster et al; 2008; Amburst et al., 2009; Buyya et al, 2009; Weinhardt et al. 2009; Chang et al., 2011 a; 2011 b; 2011 c; 2012 a; 2012 b; 2012 c; 2013 a; 2013 b). Amburst et al (2009) identified cost reduction in IT services from using Cloud Computing. They also presented their Cloud Computing economics and ten major challenges for Cloud Computing. They emphasise a shift of risk from maintaining data centres and the capital costs of running them to the loss of data while managing Clouds. Buyya et al. (2009) assert that Cloud Computing offers billing-based Service Level Agreements (SLA) which can be used for operational management offering cost-savings and streamlining business activities and processes. Weinhardt et al. (2009) propose the business models for Cloud Computing services. Chang et al. (2011 a; 2011 b; 2011 c; 2011 d; 2012 a; 2012 b; 2012 c; 2013 a; 2013 b; 2013 c) and Chang (2013 a; 2013 b; 2013 c; 2013 d; 2013 e) provide their rationale, analysis and discuss to demonstrated added values offered by Cloud Computing adoption supported by their case studies.

The structure for this paper is as follows. Section 2 explains the integration-related problems faced by organisations. Section 3 presents Business Integration as a Service (BIaaS) overview and the research question associated with Cloud adoption. Section 4 explains system design and architecture of integrating two services: ROI Measurement as a Service (RMaaS) and Risk Analysis of Services (RAaaS). Section 5 shows the first BIaaS service, RMaaS, and Section 6 presents second BIaaS service, RAaaS, for the University of Southampton, including how to integrate RMaaS and RAaaS and its results. Section 7 further discusses results and its implications. Section 8 sums up conclusions and outlines future work.

2. THE PROBLEMS

Integrating different business activities together into the same environment can improve efficiency, reduce costs and improve collaboration. This is particularly true for big organisations with many locations and departments deploying Cloud Computing and for businesses to achieve long-term sustainability using Business Process as a Service (BPaaS) to improve business connectivity and streamline the essential process. Höing et al. (2009) use Grid Computing and WS-BPEL to demonstrate BPaaS as an Orchestration as a Service Infrastructure. Norta (2010) used his service hub system architecture to explain how BPaaS works. However, BPaaS is process dependent and focused on a particular process at a time, and is not necessarily connect different business activities together.

Integrating different Clouds take additional time and resources, and there is no guarantee that the outcome will be positive without the use of a consolidated framework to help with design,