

Convergence of Interoperability of Cloud Computing, Service Oriented Architecture and Enterprise Architecture

Susan Sutherland, University of Canberra, Canberra, ACT, Australia

ABSTRACT

The research identifies the gap that there is a convergence of interoperability of Cloud Computing (CC), Service Oriented Architecture (SOA) and Enterprise Architecture (EA). Furthermore, it outlines the existing non dynamic links between EA and SOA that are currently practiced in the industry and confirmed by scholarly articles; and provides a state of art of the link that could exist in practice between cloud computing and SOA as researched from the published scholarly material. This researched paper also refers to the planned research to test this theory first by developing a logical architectural model of such a feasibility followed by a Proof of Concept

Keywords: Cloud Computing (CC), Convergence, Enterprise Architecture (EA), Interoperability, Service Oriented Architecture (SOA)

INTRODUCTION

The purpose of this research is to identify the gaps in the literature on the interoperability of convergence of cloud computing, SOA and EA; and state the significance of this study. The rest of this research paper consists of three parts namely, review of literature in the space of interoperability of cloud computing, SOA and EA; significance of this research and conclusion and further research.

Cloud computing is an emerging technology and has been classed as a disruptive technology. The last disruptive technology experienced in the ICT world was as a result of the emergence of the Internet. This interruption gave impetus to the use of OSI protocols such as X500, XML and SOAP. With this also came a greater scrutiny on the security and hence the releases of the internet security technology tools such as the firewalls and load balancers; and the introduction of such products as Intrusion Detection and Prevention Services.

DOI: 10.4018/jeei.2013010104

Apart from the associated technology products, enterprises had to change the then existing method of identifying business process and learn to reengineer process in a more formal manner. The emergence of Internet also set a direction for the e_business infrastructure which then led the deployment of web technology to support the business services. With the introduction of web services emerged the most used services today, the social media and social networking tools like face book and twitter. So the question is how many of the downstream services enterprises will benefit from if same deployment impetus is given to cloud computing. This is summed up below by Christensen (2009):

What all sustaining technologies have in common is that they improve the performance of established products, along the dimensions of performance that mainstream customers in major markets have historically valued. Most technological advances in a given industry are sustaining in character.

As such, to understand the implications of this paradigm, it requires the same amount of diligence by the users and cloud service providers as when Internet services were launched to make an appropriate level of changes in the areas of transition, service level agreements; and deployment of cloud computing.

There is no doubt cloud computing is a large-scale distributed computing ever witnessed before and thus is bound to disrupt businesses at their core. Cloud computing is a scalable computing model that delivers a service over a network as opposed to a product. The industry literature suggests that it is an extension of the services provided via virtualisation and grid computing infrastructure along with the use of other enabling technologies such as SOA that will contribute to the business as usual activities within an enterprise. It is the use of enabling technology such as SOA that will be leveraged by the enterprises where enterprises using SOA will need to incorporate cloud computing and

SOA into their existing and new enterprise information, communications and technology (ICT) architecture.

In order to understand the convergence of interoperability issues, the concepts of the cloud computing, SOA and Enterprise architecture need to be clearly defined.

Service Oriented Architecture

SOA is a method of design, deployment, and the management of both applications and the software on the infrastructure where all software is organized into business services that are accessible and executable and where service interfaces are based on public standards for interoperability as defined by Blake and Wei (2010). SOA is also a business-driven IT architectural approach that supports integrating a business as linked, repeatable tasks or services.

The key technical concepts of SOA are:

- Services;
- Interoperability; and
- Loose coupling.

For the purpose of this research, the writer defines SOA as a set of predefined services that are held in a repository and that can be accessed dynamically when required via the use of web services technology. These services can also be discovered even if and when calls for such services are not clearly defined. These services are built on the specific procedures, policies and framework. The services are based on protocols and can be discovered and published and are independent of platform in a non-coupling manner. The following protocols which have been highlighted by Blatzan (2010) are commonly used in a SOA environment:

- Universal Description, Discovery, and Integration, **UDDI**;
- The Web Services Description Language, **WSDL**;

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