The Impact of Standards in Web Services Security

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ABSTRACT

The Internet has provided an avenue for businesses to adopt web services. Web services promises scalability, agility, cost reduction, profitability and availability thereby meeting instant gratification needs of web users’. It refers to modular Internet-based business functions that perform specific business tasks to facilitate business interactions within and beyond the organization. While addressing web services benefits there have been discussions on the importance of its security. The security of web services has deeply influenced its development and is also one of the main reasons why web services have not been adopted widely. Therefore, this study aims to examine the impact of web services standards and how it facilitates web services security. We analyze security models in web based technologies from previous studies such as; in cloud computing and security as a service technologies to develop a framework of web services standards and its impact on web services security. We then discuss the theoretical and practical implications of web services security and directions for future research.

Keywords: Security, SOAP, Standards, UDDI, Web Services, WSCI, WSDL, WSFL, XML

1. INTRODUCTION

Web services are rapidly becoming the enabling technology of today’s e-business systems. Web services are interoperable and loosely coupled components used for simplifying business processes over the Internet (Tewari, Thakar & Dagdee, 2013). Businesses use existing software components specified

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as services to perform business operations in a Service Oriented Architecture environment. Similarly, web services refer to a set of software applications or components developed using a specific set of application programming interface (API) standards and Internet-based communication protocols. They are defined as “modular Internet-based business functions that perform specific business tasks to facilitate business interactions within and beyond the organization.”

Web services generate sustainable competitive advantage for firms supporting their core competencies and adding value to the execution of the corporate strategy (Hu & Huang, 2016). It is apparent today that multimedia communications and web services constitute the confluence point where the interest of service providers, telecommunication operators and end users meet (Hamdi, 2012; Hamdi, Tabbane, Kim & Hussain, 2012). Further web services promises scalability, agility, cost reduction, profitability and availability thereby meeting the instant gratification needs of web users (Karadsheh, 2012).

It aims to bring requesters, providers and brokers together. Web services can be advertised (in a service repository) by service providers and used by service requesters, thus enabling match making between providers and requesters. Specifically, web services are enhanced e-business applications that are easier to advertise and discover by other businesses. Due to this, it is also referred to as “cloud computing” defined as “a model for enabling convenient on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services), that can be rapidly provisioned and released with minimal management effort or service provider interaction (Mell & Grace, 2010). It aims to provide sophisticated software packages that enable electronic storefronts and catalog-based sell side solutions to integrate together.

Alternatively, businesses today have to keep up with customers who are demanding more information from suppliers about delivery schedule and other key performance metrics. Businesses are left with competitive pressures and are forced to reduce costs, or improve service without providing any value in return. Therefore, instead of building and maintaining unique internal systems, organizations are renting and outsourcing their functionalities needs; whether it is data storage, processing power, or specific applications from outside web service providers. Since there are many stakeholders and operating systems involved both internally and externally, the security of web services is a concern to the extent where it has deeply influenced its development and is also one of the main reasons why web services have not been adopted widely.

This study aims to examine the role of web services standards and how it facilitates web services security. The goal is to develop a framework to enhance web services security. The research proposes a framework to examine the impact of web services standards and security mechanisms by understanding a firm’s security requirements. To achieve,
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