Development Cloud Computing System for Managing Risks in an e-Learning Environment

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Abstract: Cloud computing provides lots of advantages but today, cloud computing suffers from security risks. Thus, the aim of this study is to propose cloud risk management to mitigate risks in an e-Learning environment. This study will guide developers to apply cloud risk management practices with real world in higher education organizations and verify the effectiveness of the modeling intelligent cloud methods. In the study, we will use intelligent methods to reduce risks in the Iraqi higher education organizations. However, the data gather for this study to be used in the modelling is getting from the developers in the Iraqi higher education organizations. In addition, we incorporate between e-Learning and cloud computing systems to develop higher education organizations.

Key words: Cloud, computing, provides, incorporate, e-Learning, organizations

INTRODUCTION

Clouds are more complex environments with further concerns like risk, trust, eco-efficiency, security (Kiran *et al.*, 2011). Furthermore, cloud computing allows simple and easy user access, handles user's dynamic and elastic demands effectively and provides convenient metered usage for its resources and hence it is increasingly being adopted by individual users as well as enterprise users. However, several serious issues concerning security, data protection and ownership, quality of services and mobility need to be resolved before cloud computing can be widely adopted (Hoang and Chen, 2010). However, cloud computing is still in its early stage and suffers from lack of standardization. What actually happens is that most new cloud providers propose their own solutions and proprietary interfaces for access to resources and services. It raises barriers to the path of the ubiquitous cloud realization (Toosi *et al.*, 2014). In addition, cloud computing provides lots of advantages but today, cloud computing is suffering from security risks. Security is a biggest concern of client these days. If client want to take full advantage of cloud computing so client must ensure about data, infrastructure and application security (Anzi *et al.*, 2014). Cloud computing has various service delivery and deployment models that raised the need for an appropriate identity management in terms of security,

risks, privacy and provisioning of services to ensure the authorized access as well as to manage access control points, Virtual Machines (VMs) or service identities, etc. (Bamiah *et al.*, 2012). Cloud computing promises to have far-reaching effects on the activities of financial institutions, yet a change in the way of acquiring IT resources does not negate organization's responsibility of appropriately managing these resources and ensuring that these resources fit into existing business processes (Adjei, 2014).

MATERIALS AND METHODS

We will propose new cloud risk management for e-Learning environment based on intelligent methods to help us mitigate risks in the Iraqi higher education organizations. In the study, we will use intelligent methods to reduce risks in the Iraqi higher education organizations. However, the data gather for this study to be used in the modelling is getting from the developers in the Iraqi higher education organizations. In addition, we incorporate between e-Learning and cloud computing systems to develop higher education organization.

RESULTS AND DISCUSSION

Importance of could computing in e-Learning: With the emergence of cloud computing which can deliver

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on-demand high-performance computing resources over the internet, cloud workflow systems offer a competitive software solution for managing large numbers of business processes (Liu *et al.*, 2012). However, we consider a Mobile Cloud Computing (MCC) interaction system consisting of multiple mobile devices and the cloud computing facilities (Wang *et al.*, 2013). Cloud Computing (CC) is coined as the paradigm shift of Information Technology (IT), as compared with the Packet Switching of Networking Technology (Rajaei and Wappelhorst, 2011). The usage of IT by universities, colleges and schools for impacting training programs is gradually increasing. Hence, the need for networks, servers, storage, applications and services to support these institutions is drastically growing. Thus, educational institutions have started gradually investing in the infrastructure, platform and software they need. Furthermore, the educational institutions demand for computing needs keep on changing from time to time (Dokurugu and Amos, 2016). The student's expectation for instance is to also be able to have easy access to their information as in being able to view the information on their Personal Digital Assistants (PDAs), tablets and mobile phones, etc. A solution which maps the needs of educational institution is cloud computing (Dokurugu and Amos, 2016).

However, the cloud computing only highlight security challenges and risks, prevalent undoubtedly, especially at the time when the popularity of cloud computing continues to mount (Bernardo, 2013). Users cloud computing as the integration of computing and communication capabilities that provide avenues for better information processing with great ease of accessibility and flexibility (Bernardo, 2013). To address these challenges, they developed the hybrid cloud architectural framework for controlling and managing network of integrated computing services in on-and off premise cloud environments (Ghani and Jaber, 2015). Cloud computing brings in many advantages for enterprise IT infrastructure virtualization technology, which is the backbone of cloud, provides easy consolidation of resources, reduction of cost, space and management efforts. However, security of critical and private data is a major concern which still keeps back a lot of customers from switching over from their traditional in-house IT infrastructure to a cloud service (Datta and Goyal, 2014). More security risk strategies should be deployed in the cloud environment to achieve the 5 goals (i.e., availability, confidentiality, data integrity, control and audit) as well as privacy acts should be changed to adapt a new relationship between users and providers in the cloud literature (Zhou *et al.*, 2010). According to

Kottari *et al.* (2013), a cloud application needs a constant connection that might prove to be an Achilles heel for the cloud computing movement (Ghani and Jaber, 2015). Cloud computing provides functionality for managing information data in a distributed, ubiquitous and pervasive manner supporting several platforms, systems and applications (Doukas *et al.*, 2010). This study is to develop cloud computing for managing e-Learning environment by artificial intelligence. In addition, it is to propose the new framework for cloud e-Learning for successful cloud computing environment. Cloud computing provides compatible and on-demand network access for numerous computing resources such as networks, systems, applications and services (Jassas *et al.*, 2015). Moreover, cloud computing are using modern and flexible methods to provide, manage and pay for information technology services with minimal management effort and cost.

Issues facing cloud computing in e-Learning : Although, cloud computing being used in most higher education institute is still in its infancy lever when compared to its usage in most conglomerate companies that deal with huge volume for data's, there are still rooms for its improvement as per usage as much more benefits can be achievable in institutes if well implemented (Mohsmmrf *et al.*, 2014). Commonly (Ali *et al.*, 2014), cloud computing risk management consists of the processes, methods and techniques that useful to mitigate cloud computing risk failure. In general, risk management starts with risk identification and classifying potential risk elements (Holzmann and Spiegler, 2011). Security risk management is becoming increasingly important in a variety of areas related to Information Technology (IT) such as telecommunications, cloud computing, banking information systems (Mounzer *et al.*, 2010). Cloud security is a broad topic and any combination of policies, technologies and controls to protect data, infrastructure and services from possible attacks. Existing researches focus on providing security technologies, rather than business features such as services stability, continuity and availability (Gao *et al.*, 2013). The cloud computing and business models have been some of the biggest changes impacting not only the computer industry but also several others. It is predicted that around 80% of the businesses from today's world will be moved to the cloud by the years 2020 (Ahuja *et al.*, 2012).

Research aim: The main goal of this study is to propose cloud risk management to mitigate risks in an e-Learning environment. Thus the objective is to propose a conceptual framework for developing cloud risk

management in an e-Learning environment besides predict risks in an e-Learning environment by using intelligent methods finally identify risks in an e-Learning environment for higher education organizations.

Scope of study: The data gather for this study to be used in the modelling is getting from the cloud computing developers in the Iraqi higher education organizations based of ministry needs to prvide best framework.

CONCLUSION

This study will guide developers to apply cloud risk management practices with higher education organizations and verify the effectiveness of the modeling intelligent cloud methods. We hope that the methods will success in the cloud risk management in an e-Learning environment, which will improve the probability of cloud e-Learning project success. In addition, we will identify risks in an e-Learning environment for higher education organizations that guide developers understand and mitigate it in the higher education organizations.

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