A Governance Based Architecture for Enterprise Cloud Computing Adoption

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ABSTRACT

In the trendy wide adoption of the cloud computing solutions, the relevant challenge has changed from the opportunities and capabilities offered to the governance issues when moving to this new computing paradigm. Since, the enterprises are considerably interested about keeping control even in the virtual environment. To fulfill this objective an architectural approach is introduced: Governance-based Architecture for Enterprise Cloud Computing Adoption. As an alternative to the big organism’s Cloud Computing Reference Architecture (CCRA) which is provider-centric, the proposed architecture is consumer-centric and tries to deal with the enterprise requirements and needs. The core architecture is articulated in seven modules which are enveloped by a Unified Cloud Service Interface.

Keywords: Cloud Adoption, Cloud Computing, Cloud Computing Reference Architecture, Cloud Governance, Cloud Services, Enterprise Cloud Service Architecture, IT Governance

INTRODUCTION

In both changing and volatile world, Enterprise seems to be ostensively and in different manners, up to the performance climax. Accordingly, the technological core enhances this fact by the adoption and the delivery of novelty. Sometimes this is taken as a fashionable parameter, for a mere trendy purpose and not for operational needs. As a case in point, Cloud computing is a highly advanced performance on computing system, that over the past few years, the big Cloud providers seek to endorse its adoption, not merely as a necessity, but also as the future proactive solution.

Cloud Computing is a promising approach for implementing a new IT ecosystem (Kim et al, 2009), highly scalable for individual-, community-, and business-use (Brandic et al, 2010), that brings together a set of existing technologies to run business in a different way (Zhang et al, 2010) like Virtualization, Web, Scale-out, and...
Infrastructure hardware and software technologies (Kim et al, 2009).

In (Lina and Chen, 2012), interviewees affirm that “we do not use cloud just because it is the Cloud”. By this, moving to the cloud is not a simple decision and would not be a case to be tackled. Because, the benefits of cloud solutions are not widely realized in practice (Lina and Chen, 2012) and cost saving estimates that are often cited by cloud providers cannot be generalized across all IT systems (Khajeh-Hosseini et al, 2012) and can only be realized for a specific classes of companies (Lina and Chen, 2012), e.g. the new ones. Nevertheless, with the focus in the financial advantages, the notion of Governance is out of Cloud priorities discussion. When the Users change to Choosers (Yanosky, 2008; Khajeh-Hosseini et al, 2012), and business unit personnel can bypass IT department and receive services directly from the providers (ISACA, 2009), it is the whole corporate governance which is compromised.

Throughout the course of the evolution of the Cloud Computing, we assume that the IT Governance should be taken into account. As it offers a new concept of computing, the governance has to follow, and should be easy to implement and simple to use. Differently to the traditional IS environment, the virtual environment is more complex to govern, due to its pervasive and multi-protagonist nature. So, a new concept of governing has to take place so as to fit with cloud characteristics and to satisfy its requirement. Striving to get this challenge occur, we propose a Governance based Architecture for Enterprise Cloud Computing Adoption that act in the different phases’ of the Cloud lifecycle: choosing, implementing, monitoring and eventually migrating. To underpin our approach, we will firstly highlight the Cloud state-of-art, its requirements and challenges. Secondly, we will present in details the Architecture with its different features. Thirdly, we will shed light on the impacts of the architecture in the discussion part. Then finally, we will sum up with a deduction and a set of future works.

BACKGROUND AND STATE-OF-ART

Definition

In the literature, most of the recent researches (Zhang et al, 2010) tend to consider the NIST definition of Cloud (NIST(2), 2011) as the accepted one. This is defined as “a model for enabling ubiquitous, 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. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployment models.” Despite of the generic aspect of the definition above, there is no mention of Governance. In (Al Falasi and Serhani, 2011), there is an addition that concerns the QoS guarantee and personalized environment with a simple and pervasive access way.

As (Marston et al, 2010) tried to encapsulate the key benefits of cloud computing from a business perspective as well as its unique features from a technological perspective, it is defined as an Information Technology Service Model where computing services (both hardware and software) are delivered on-demand to customers over a network in a self-service fashion, independent of device and location.

In (Schubert and Jeffery, 2012), current definitions reflect the status, but neither the intention behind CLOUDs, nor the direction into which they will (or should) develop. Therefore these definitions cannot serve the purpose of steering research and development and new offerings will constantly readjust our understanding of CLOUD computing. The proposed definition is “an elastic execution environment of resources involving multiple stakeholders and providing a metered service at multiple granularities for a specified level of quality (of service).”

It suffices to say that, there is no distinguishable reason to substitute the standard definition
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