Chapter 63
Cloud Computing Applications in the Public Sector

Amir Manzoor
Bahria University, Pakistan

ABSTRACT

Cloud computing brings key advantages to the governments facing conflicting IT challenges. However, the cloud paradigm is still fragmented and concerns over data privacy and regulatory issues presents significant barriers to its adoption. Cloud computing is expected to provide new ways to run IT in public sector. At the same time, it presents significant challenges for governments, and to make the most of cloud, public sector organizations need to make some important decisions. Governments planning to migrate to the cloud are actively moving to harness digital services but with different focus, reasons, and strategy. However, the degree of cloud adoption by the public sector around the globe varies significantly. Most governments are piloting cloud computing but there are huge differences between each country. This chapter explores the state of the art of cloud computing applications in the public sector; various implications and specific recommendation are also provided.

INTRODUCTION

The shift from client-server computing to the cloud computing is bringing a paradigm change in Information Technology (IT). Cloud computing provides cheaper, faster, easier, more flexible, and more effective IT. Where this paradigm will take us, is difficult to anticipate. However, the rising tide of emerging IT technologies is carrying both private and public sectors, both locally and globally, into territories, which are new and uncharted. This is the era of open data, and the consumerization of IT. We see a transformation of dynamics between public sector and users of public services. With increasing user expectations, several IT-related issues have become more significant than ever before. These issues include service delivery, efficiency, transparency, and quality of service etc. With the evolution of technology, while the technological capabilities are rising, the technology deployment risks are reducing. Governments are finding technology deployments easier and less expensive and continuing to leverage technology to provide modern services to their citizens. However, a world that is increasingly connected than ever

before pose serious challenges for the governments. Increasing amounts of data poses serious issues related to access, storage, and use of this data including sovereignty, security, and privacy (Lori, 2009). The biggest challenge for governments is to find ways to leverage technology while meeting the above-mentioned challenges and adhering to standards of compliance and security.

Cloud computing has emerged as a solution for a broad array of computing needs and requirements such as custom software environments (Armbrust et al., 2010; Erl et al., 2013). As such, cloud computing has drawn significant attention from both industry and research scientists. Cloud services, both public and private, has demonstrated potential of providing scalable and cost-effective services that can handle various enterprise and web workloads and can be pooled so that a large number of users can access them economically (Pokharel & Park, 2009; Bojanova et al., 2013).

Governance Challenges for Governments

In a bid to serve their citizens better, governments continue to look for use of modern technologies. This use of technology, however, brings two conflicting demands. First, enough investment is required maintain and improve standards. Second, they need to come up with customized technology solutions that best meet their needs, under tighter budgets. The situation gets further complicated given that governments also have legacy IT software and infrastructures. The compartmentalized IT infrastructures are inflexible and expensive. Therefore, governments need to think of new, innovative ways of providing services in order meet the demands of citizens. Cloud computing is an agile approach that is also cost-effective, scalable, flexible, and secure. The critical question now is not whether governments are using cloud computing, but how. While private sector has placed the use of cloud computing at the center of their IT strategy, public sector has just started to adopt cloud computing (Cellary & Strykowski, 2009).

However, a few important decisions must be taken by governments before they decide to leverage the use of cloud computing paradigm. First question is about the governance of cloud computing, the leadership of cloud adoption effort, and the assurance that the desired impact of cloud computing actually occurs. The second question relates to the business question of cloud adoption that will show the clear benefits of cloud adoption and win the support from all stakeholders for cloud adoption.

With respect to the governance of cloud computing, we first need to look at today's governments where three bodies are usually responsible for running the IT functions: 1) a president's office is usually responsible for any changes to government services; 2) various departments or ministries are responsible to source and develop their own IT systems to meet their own specific needs; 3) a core IT function is the responsibility to make IT efficient, consistent and standardized. However, these three components seldom work together and try to protect their autonomy and budgets while avoiding sharing of data because of data security concerns. This non-collaborative approach runs against increasing efficiency and enhanced service delivery. Cloud computing can cuts through the inefficient segregation of IT infrastructure using reusable components and shared architectures and applications. Cloud computing promotes collaboration among people and delivers convenient and flexible services to end users across any government. With their segregated IT infrastructures, public sector organizations have duplicate resources that push up costs. Use of cloud computing allows governments at every level (e.g. local, regional, national) to benefit from the scalable resources and pay-per-use costing of cloud (Wyld, 2009). With systems consolidation, cost savings and greater speed and agility, cloud makes a compelling business case (West, 2010). This brings us to the second area that governments have to address before moving to cloud environments i.e. making a strong business case for cloud computing and its adoption.

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