Cloud Computing for Small Enterprises: Benefits, Challenges and Future

Abstract

Information and communication technologies have revolutionized the modern workplace. A business regardless of the size and sector is unimaginable without an efficient and robust IT infrastructure. Cloud computing is one of the latest advancements that can help in enhancing business efficiency and profitability. In this article we analyze, from a small business point of view, the benefits, challenges and future of cloud computing. The aim is not to present underlying technical details, but to give an overview that can help small businesses make an informed decision.

1. Introduction

Cloud computing is being hailed as the technology that engenders the paradigm shift for information systems in business. It would be useful to define the term before we look at benefits and challenges of cloud computing in small business. There is no standard definition but we can understand *cloud* as a cluster of computers that provides both resources and services on-demand (Sultan, 2011). Interested reader can refer to (Conway, 2011) for an excellent overview of various service models in cloud computing.

2. Benefits of Cloud Computing

In this section we will discuss various benefits of cloud computing in the context of small business.

1. As information systems are an integral part of any organization regardless of size and sector, investment in information resources is vital to stay competitive. However, there are always budgetary concerns especially for small and medium size enterprises. Cloud computing, as Anderson (2011) argues has the potential for delivering low cost solutions. This is primarily due to the power of cloud computing to harness the existing resources. The significant reduction in the amount of investment required into hardware resources presents an opportunity for the smaller companies to benefit from the advancements on the software side (Marston et al., 2010).

2. The data requirements of the client can vary and it is important that the provided services can be scaled accordingly. A major advantage of cloud computing is that it enables enterprises to seamlessly scale their services to suit the clients' needs (Dubey, 2007). Scalability is a vital characteristic of cloud computing (Castellina, 2011) and it is sometimes included in the definition of term (Gustafson and Orrgren, 2012).

3. Strength of cloud computing also lies in the fact that it allows mobility. Employees can access official data at any time to cater to any demands. The recent advancements in processing power of handheld devices combined with data access through cloud computing offers greater workplace flexibility and mobility (Cloud news desk, 2008).

4. Another advantage of cloud computing is aiding innovation especially in the information technology sector. Without the need for extensive investments in hardware, start-ups can divert their resources towards developing their novel concepts.

3. Challenges and Shortcomings in Implementing Cloud Computing

Despite potential benefits highlighted by researchers and practitioners, cloud computing is a relatively new technology. There are various issues that need to be considered before moving the existing information systems to cloud computing. It is important to remember the gap that exists between academia and business. In this we discuss aspects that need to be considered before a business decides to adopt cloud computing.

1. An in-depth understanding of the existing IT infrastructure is important. Misra and Mondal(2012) present a checklist for enterprises. They urge the businesses to consider four points to make an informed decision i.e. size of IT sources, patterns of use, data sensitivity and how critical is the company operation.

2. Many analysts have pointed out the issue of monopoly when it comes to providing cloud computing services. The issue of vendor lock-in can have serious repercussions for small businesses in case of data loss. As the services are offered through proprietary software and lack of standards makes portability a major concern (Sultan, 2011).

3. The cloud is expected to handle a massive amount of data. Therefore, it is important to understand key security issues and potential pitfalls (Subashini and Kavitha, 2011; Chen et al., 2011). Review of security protocols in various models of cloud computing stresses the need for a standardized framework. For example with SaaS, a major concern is the lack of control and dependence on the provider for ensuring proper security measures. On the other hand, IaaS does give the client much more control but it relies on security strength of the virtual machines. Another issue is ensuring the security, integrity and persistency of data while transferring data within or between clouds (Khalid, 2010) and maintaining the confidentiality of the client data (Yoo, 2011).

4. Information and communication technologies are unique in the sense that their introduction into a personal, educational and commercial setting raises an issue of ethics. Cloud computing is no exception, and various studies have focussed on the issue of acceptable and ethical behaviour in the context of cloud computing. Ratten(2012) stresses the need for stronger guidelines and higher ethical standards, otherwise the presence of huge amount of data is a motivation for aberrant behaviour. We recommend that tougher legal actions against unacceptable behaviour. Normal cyber standards will put a cloud computing system at risk. Traditional end user perception that cyber world is different from physical world (Johnston and Johal, 1999) will not work in the realm of cloud computing.

4. Future of Cloud Computing

Despite various challenges the future of cloud computing looks very promising. Keeping in view the advantages listed above, business writers highlight bright prospects for small and medium enterprises (Grayson, 2011). The business value of cloud computing (Weinmann, 2012) will make it competitive for small businesses to deliver high quality services. As there is a growing demand for standardized framework, small businesses will have the option for switching providers reducing the monopoly of big corporations. An interesting report published by Accenture (Willcocks, 2012) predicts that SME will lead the way in switching to cloud computing enabling them to bridge the gap between SMEs and large corporations. Before we conclude this section it is important to mention that cloud computing can go a long in contributing towards a more climate friendly workplace (Scott, 2012).

5. Conclusion

In this article we have looked at the benefits, challenges and future of cloud computing in small business. This new technology offers some key advantages proven by elaborate research studies. Business writers have also expressed optimism. However, some challenges have been highlighted by researchers and practitioners. The biggest challenge in the light of our analysis is creating a unified framework that will allow portability and competitive pricing of cloud computing services .

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