Should We Move Data & Computation to the Cloud, & When?

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Technology has undergone significant developments in the recent past. As a result, organizations and individuals generate massive amounts of data stored in several locations. There is an increasing need to process the data and utilize it to make personal or institutional decisions. As such, people and companies choose to expand their data storage capabilities for retrieval, analysis, interpretation, and utility to inform business processes (Corrado & Moulaison-Sandy, 2011). Additionally, firms recognize the need to access and work on stored data from any location using any device that has internet connectivity. Thus, cloud computing is increasingly adopted in different spheres, especially with the rising number of telecommuting employees.

Data storage in conventional ways continues to expose organizations to the risk of hacker infiltration that could lead to data theft and other malicious activities. The introduction of cloud computing has caused a paradigm shift in business processes. Cloud computing comprises software, platform, and infrastructure that securely provide data services (Corrado & Moulaison-Sandy, 2011). For instance, an organization that utilizes traditional software for financial management could adopt cloud computing to manage all aspects of its accounting data. Subsequently, staff working in the finance and accounting department would only require login details to access the cloud and work on their financial statements and models securely. Furthermore, the system provides a trail of activities that tracks who does what, at what time, and from which location. However, cloud computing systems are not entirely secure, mainly because vendors that provide such services could expose data to third parties (Corrado & Moulaison-Sandy, 2011). Several factors should be considered before deciding to move data and computation to the cloud.

To begin with, whenever an organization stores data frequently, over time, it would amount to large data. The characteristics of large data include its volume, diversity, speed, and worth (Zhongyan & Lizhe, 2018). If a company requires to constantly generate information from large data, then it would be necessary to move it to the cloud and leverage cloud computing. For instance, the use of social media for marketing purposes has become rampant. Firms utilize platforms such as Facebook, Twitter, and Instagram to send promotional messages to their potential customers. In the process, social media users interact with the advertisements and react to the communication either through liking, sharing, or posting a comment. Consequently, data is

constantly being generated and, if stored for a long period, could result in large data. To derive information from the data, the utility of cloud computing would aid in its classification, analysis, and report generation in a simplified manner for ease of comprehension (Zhongyan & Lizhe, 2018). However, there are chances of capturing unstructured data that could be of low-value density to the company, which might not justify the input cost. Thus, if the management of data becomes a concern, then a company needs to adopt cloud computing.

Additionally, when the security of data poses a risk to a company, then it would be essential to move data and computation to the cloud. An organization should not wait until it experiences financial loss due to data exposure to adopt cloud computing. Provided a secure cloud data storage platform and infrastructure is assured, then it is necessary to move to the cloud. A secure cloud is designed to ensure dynamic data verification and system monitoring in terms of access (Aiyer et al., 2015). For example, a well-structured cloud computing system gives users storage correctness, which leads to the retrieval of the right data appropriately and when required. Payroll data for a company with over one hundred employees could easily be secured through the cloud and processed periodically to ensure the staff is paid on time, using the right payment channels, and that proper salaries are processed. Moreover, secure systems identify data errors, provide dynamic data support, and portray dependability (Aiyer et al., 2015). However, assurance of data security might require costly infrastructure investment that some small and medium-sized companies might struggle to attain. In general, cloud computing systems are secure, and because most companies generate sensitive data to some degree, moving data and computation to the cloud is inevitable.

Moreover, organizations that require flexibility in their data management efforts need to move data and computation to the cloud. Cloud computing provides solutions that enable users to work at their pace and on their own terms. For instance, the platform offers the capability to easily move data from one digital location to another (Satish et al., 2016). A proper demonstration would be to transfer inventory data from the online folder maintained at the factory to a master location maintained by the procurement manager in the corporate headquarters. In the process, flexibility is also achieved through the ease of collaboration, where different people can work on the same file simultaneously and progressively (Satish et al., 2016). Pliability is also created through cloud computing by offering global access to data attributed to the incorporation of diverse and compatible platforms. However, flexibility requires constant updates of the system, advanced security expertise, constant use training, and outsourcing of some system functions that could increase the maintenance costs associated with cloud computing (Satish et al., 2016). In brief, data security issues prompt companies to move data and computation processes to the cloud.

Furthermore, cloud computing integrates disparate analytical methods despite the collection of data from different quarters (Muniswamaiah et al., 2019). Moving data and computation to the cloud allows businesses to decide on the best framework for statistical exploration. For instance, it would be appropriate for a market research company to utilize sentiment analysis to determine consumer attitudes that drive the decision to purchase a certain product (Muniswamaiah et al., 2019). Additionally, a company operating in the fintech industry could use fraud detection as an analytical method to find out possible ways of being swindled and establish methods of mitigation (Muniswamaiah et al., 2019). Consequently, the application of machine learning, which is available through cloud computing, would aid the system in automatically identifying system breaches and undertaking corrective measures (Muniswamaiah et al., 2019). Similarly, the utility of data visualization techniques could be leveraged by presenting data in simplified formats upon completion of analysis (Muniswamaiah et al., 2019). In conclusion, technology is being embraced by organizations on a large scale. As a result, data is being generated frequently with the application of different systems to run business processes. Subsequently, cloud computing has emerged as a concept that can aid companies in managing their data. It is paramount to move data

and computation to the cloud without hesitation due to several factors. The facets include the storage of large data, security concerns, the need for flexibility, and the provision of analytical methods by cloud computing platforms. Despite the major costs involved, proper data management systems are essential for the success of any institution.