

## **Cloud Computing – Challenges for Enterprises – An overview**

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## **Introduction:**

When an enterprise plans to move to a cloud platform the first thing that comes to mind is the cost savings, computing power, benefits like increase in productivity, availability, business continuity as so on. But, one should not decide the migration based on the factors mentioned and there are pointers like data security, SLA, Governance, Risks, Compliance and other concerns which will make the cloud migration really challenging. This paper covers them in detail.

**No one size fits all:** The decision on moving to the cloud and the deployment model to choose are completely dependent on the business model of an organization. For instance, an online retail or movie streaming business will be having a greater demand to expand to different geographies and to seamlessly provide services to the customers and cloud computing will be a best fit for them, on the other hand manufacturing industries, small and mid-tier businesses may not need that infrastructure and moving to the cloud may not be a wise option for them. Similarly, businesses which needs more regulatory compliance such as insurance and banking may house the confidential data in-house and the rest of the data to public cloud to utilize the computing power and Hybrid cloud may be a better option for them.

**Dependency on the provider:** Once the IT applications and data are migrated to cloud then the subscriber is wholly dependent on the cloud provider and the provider may monopolize the system. They may raise the cost on the usage of the resources and that will impact the IT budget.

**Staffing worries:** Finding the talent on cloud computing for migration, re-engineering the traditional application to adapt for cloud and application development on new cloud technologies that emerge dynamically, is a hard task. Heavy lifting the existing applications to cloud and cross training the existing staffs on the new applications takes considerable amount of time and money and is a risk to consider.

**Managing cloud spending:** Cloud subscription is based on the utility model and the organizations pay for what they use. However, the organizations have to keep a check on the usage since cloud has an ability to auto scale and the usage may go up or down and hence the costs. The subscribers have to formulate best practices and monitoring methods to predict the usage and curb the over usage.

**Managing multiple clouds:** The organization who adapted cloud or planning to migrate to cloud must think that they may end up using various combinations of Hybrid, Private and Public cloud platforms to meet the exponential growth of data and applications. The organization need to have a cloud center of excellence (COE) to device plans on how to manage the cloud platforms. Without a proper plan on that, the organizations will end up in mismanagement and eventually end up in more costs.

**Data and Application management:** Data and application management on cloud will be an important factor that every organization must consider before migration. The stale data and applications need to be purged periodically from the cloud storage to effectively manage the costs.

**Performance risks:** When the applications and data are migrated to cloud then the performance of the system is completely reliable on the provider and if the cloud data center is down then the subscriber will also be down. The outages are common and the subscribers must plan to address these risks.

**Interoperability and standards:** The organizations must devise methodologies for interoperability and adapt to open source standards so that the applications reside on cloud and non-cloud platforms can share the data without hindrance. The interoperability standards will also help the organizations to move their applications to different cloud providers without “Vendor lock in” as explained above in the paragraph “Dependency on the provider”.

**Security, compliance and Governance:** The data security is a major concern for organizations planning to migrate to cloud. The data breaches on the cloud storage and APIs are very common and the subscriber may not know the physical location on where their data is stored. It is the subscriber’s responsibility to manage their data. Similarly, there are data compliance laws such as HIPAA, FCRA and ECPA which the subscriber has to guarantee its customers else it will be violation of law. So, the audit and legal team of an organization must check if the provider is compliant of data privacy laws, provides transparency on the physical storage of data and has effective mechanisms to notify the subscribers on a timely fashion on data compromises, before signing the contracts. The organization must have data governance policies and the cloud COE must effectively monitor the adherence to the policies.

**Conclusion:** Apart from cost benefits there are other factors such as data security, compliance, governance, Interoperability, performance and cloud management risks which and organization must account and mitigate an action plan before moving to a cloud platform.

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