

A Roadmap towards Cloud Migration

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ABSTRACT: Most organizations still run a large majority of their IT applications, services and workloads within their own on premises data centers. This gives significant scope to realize potential operational and efficiency improvements achievable by cloud migrating some or more of those processes into external, off-premises managed hosting or cloud service environments. In this research paper the concept of cloud migration is put upfront, as the cloud computing technology is arising day by day service providers are looking forward for advance cloud data migration techniques, including the short introduction in this paper the key features are counted upon and the key points important for migrations are studied further we discussed essentials after the migration has being done. In total this paper gives agenda to basics of cloud migration which can be extended in future studies of work.

KEYWORDS: Application, cloud computing, cloud migration, cloud types, Service providers

I. INTRODUCTION

Moving data, applications or other business elements from an organization's onsite computers to the cloud, or moving them from one cloud environment to another this process is called Cloud migration (Boutaba)[1]. Transformation from one cloud or between two or more cloud environments in the terms such as privacy of data, interoperability between data and application, data integrity, needed business continuity downtime, and security are the issues for special consideration for managing the data remotely on various, multiple, remote locations.

Cloud migration sometimes involves, which is known as cloud-to-cloud migrations “ moving data or other business elements between cloud environments” . The process of transitioning to a different cloud provider is known as cloud service migration. Tools used to bridge any gaps between the providing vendor’ s and the customer’ s (or other vendor’ s) this middleware technology known as cloud integration tool, is used for successful migration.

II. BENEFITS OF CLOUD MIGRATION

- Cloud migration allows Dynamic Scalability for business growth a micro and macro level
- Cloud migration automates all of the software and security updates i.e. Ease of Management (Boutaba)[1]
- Completely automated provisioning, release, and deployment of I.T. resources facilitate high availability
- Cost transparency and a consumption based pricing model that saves valuable resources i.e. Cost Savings Complete [6].
- Energy Savings With drastically reduced need for numerous servers, businesses can save energy and cost[6].
- When Numerous individuals ether departments, and even companies are able to share software, applications, and other I.T. resources called as Multi-Tenancy between
- Real-Time Monitoring Constantly improves performance and provisioning [4].

III. POINTS TO CONSIDERWHILE CLOUD MIGRATION

3.1. Reasons For Migrating your systems to the cloud

Although there is clearly an industry trend toward cloud migration, it is not necessarily it is the best solution for all of your applications. If the driving factor is cost savings, be sure that your cost analysis is accurate. (Boutaba)[1]. While cloud deployments may well provide long term cost savings, they may not always have the immediate impact that many organizations are looking for.

3.2. Type of cloud and services needed- Public, private or hybrid clouds

When your applications run on servers shared with other entities/ companies it is Public cloud it is more flexible, scalable and affordable. Dedicated servers either locally or hosted for personal use is private

cloud. It tends to be more secure than public cloud. As the name implies hybrid clouds employ a mix of both public and private clouds [1].

For migrating user should know which type of cloud service is needed among this three [1]:

1. Infrastructure as a service (iaas) (Boutaba)
2. Platform as a service (paas) (Boutaba)
3. Software as a service (saas) (Boutaba)

3.3. Below are some other issues that may affect our decision while choosing above type of cloud

- Regulatory constraints - If the provider are associated with the any type of health care or financial industries, there may be privacy or control issues that may affect use of public cloud here private cloud will be a liable option.
- Security concerns Security is major factor, and the private cloud will be better option to keep secrecy of the data to be migrated on other hand public cloud will be proven best when to share resources [2] .
- Performance Public cloud improves performance but at the same time its negative impacts on some database and application is not negotiable hence it is necessary to review the each application and database performances individually. Sometimes data is suitable to public as well as private cloud in this case, hybrid cloud is best solution.

3.4. How Applications should be migrated

Cloud migration should be a gradual process. Henceforth, the basic applications should be migrated first these will facilitate good testing, comfort level and even training for the more difficult applications to upcoming to migrate in future.

If aim is replacing an existing system, for the old application altogether may eliminate most task. If we are upgrading existing applications, the upgrade process can be taken ahead. All together concentrating on following factor may be more helpful.

- Software licensing is a critical issue when it comes to cloud migration. To avoid big surprises when application goes live, thorough review of each software license for the better cost implications is essential [2].
- The architecture of some applications is simply not conducive to a cloud environment, particularly when it comes to performance [5]. Review this issue for every application planned to migrate [3]. Mobile apps, web apps and even some old mainframe based apps may work best. Some client– server applications, however, may be more of a challenge.
- A stand-alone application that won' t have many interfaces to other programs generally gets proved better for migration.
- If we have already virtualized an application on a local server, it will be much easier to migrate to a cloud-based server [5]. Some service providers have tools specifically developed to facilitate this [2].

3.5. Service provider selection

Selecting a service provider that is a good fit for organization is critical. Looking for providers who already provide the same level of service, for enterprises, similar and be sure to address issues related to performance, reliability, backup and security with prospective providers. It is a need to work with provider to set up adequate testing environments. There is no substitution for exhaustive testing [3]. Then to discuss contingency plans for rolling back the migration if unforeseen issues arise. Below fig 5.1 shows the agenda in total of the cloud migration that goes through phases and activity. Drill down to the actual cost you can expect to pay for the service.

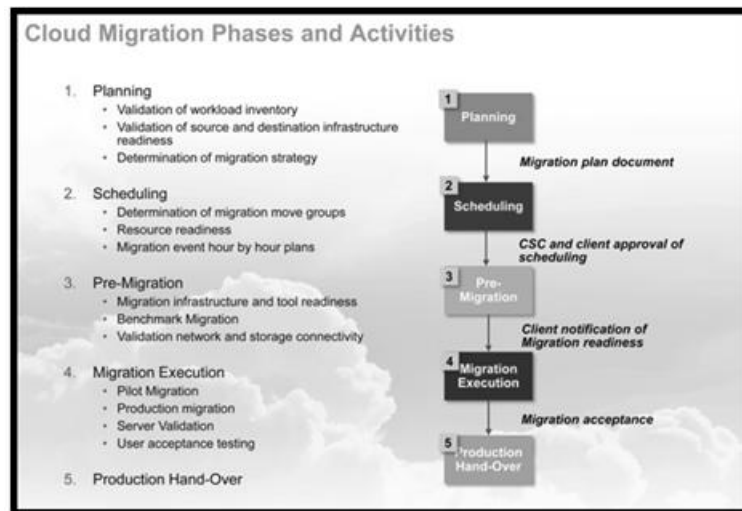


Fig1: cloud migration phase and activity

IV. PREREQUISITE AFTER CLOUD MIGRATION

4.1. Migrating to the cloud affect our applications

A primary reason to migrate applications is that Cloud providers trumpet scalability and elasticity. However, careful planning is required. Architects of migration need to consider importantly while migration process, to see whether applications can scale and be elastic. And to calculate the development resources are required to achieve the migration goals. Migration gives the cloud's benefits, such as reduced investment i.e. Cost and operational expense of firm, reduced headcount of monitoring i.e. Manpower, maintenance and support and full scalability[3]. Planning is very important in advance of development and after that deployment is essential factor for maximizing the benefits of the cloud to migrate.

4.2. Refactoring our applications to perform in a cloud environment

Moving to the data to cloud introduces new environment considerations and conditions as part in the migration process. When complexity of application increases there is a need to refactor or redevelop the existing application because of the differences occurred in migration. Here By 'refactor,' mean restructuring or rewriting a body of code or architecture, resulting in a change in internal structure or design, yet the behavior remains the same.

Code refactoring optimize the performance of application and this needs to be considered when changing the deployment infrastructure architecture [3] To refactor in correct way, it is needed to develop the architecture and conditions across the cloud which will divide the work on which you will deploy. By vitalizing the cloud environment, can accurately be tested and optimized to the refactored code.

4.3. Deployment and management strategies change with the cloud migration

While going thru the various process such as to deploy, test, back out, re deploy, retest, Etc in cloud migration process Henceforth, once migration with cloud provider is done , application is given up much of that control and flexibility.. The biggest problem is to consider is the potential for failure after migration. None of anyone can ignore this possibility and if this condition arises then it must be essential to roll back the data or application. If this roll back is not done then the client and provider both are in worse part [3]. As a result the most important drawback of down time which is considered as curse may occur.

V. CONCLUSION

Cloud computing is as a emerging technology of today' s science. Migration is very important and essential concept of this trend and technology behind it is maturing. This paper gives the intrinsic knowledge about the basic of the migration concept, focusing upon the initial needed factors to migrate which include type of cloud and application migration paradigms helping beginners to try and figure what are the essential steps and factors for migration to cloud.

Next part gives the prerequisite of the migrations that every service provider and the client must go through in order to make the process in depth strong and give advantage. Migrating to cloud is more art than it is a science, trying to figure it out the paper gives the explanations to basics in future works it will be a attempt to study the this in more details helping the research and industry to improve.

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