

An Approach of Legacy Application Migration

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Abstract: Application migration project needs a migration strategy and schedule, as migration is a difficult and time-consuming process. With project criticality in mind, governance is an integral part of the overall migration strategy and plan, as it tracks and enforces services enabling adoption for effective project execution. Enterprises should develop a structured governance framework known as the Migration Governance Board (MGB) for monitoring the migration project from the outset, as the application's business criticality necessitates it.

Keywords: Application Migration, Cloud Migration, Legacy Application, Migration Process

I. INTRODUCTION

Enterprises may face a variety of challenges, including a lack of qualified personnel, high software and hardware maintenance costs (complex patching and modifications), software scalability, business continuity, customer service, reduced operator efficiencies and effectiveness, information retention, and enterprise picture (Ali Khajeh-Hosseini *et al.*, 2010), inability to satisfy existing market requirements, and so on. Each defined problem may have a direct or indirect effect on one or more business factors, and these factors may be interconnected.

Legacy application migration is the method of switching legacy applications from one operating system to another that is considered to be better in most cases. It is possible to migrate to new hardware, software, or both at the same time. The main aim of software migration is to take advantage of the target computing model, and current systems should be able to fulfil the new business requirements regardless of computing technology. (Khadija SABIRI *et al.*, 2015).

The process of transferring applications, data, or any other software or hardware elements from on-premises assets to the cloud, or from one cloud to another, is known as cloud migration. Since the initial and target environments are bound to vary, migration of legacy systems to the cloud is a dynamic and multi-dimensional problem. Many of the difficulties are unique to each company, as a

Result; there is no one-stop solutions for any form of application migration. Understanding the intricacies of legacy technology migration in the Context of the enterprise, i.e. migration solution suitability in a specific context, is important.

Over the last decade, the cloud computing model has seen a huge shift toward adoption, and it is now mature and stable. It is now widely accepted that if a company does not use cloud, it will fall behind its competitors. One of the most significant advantages of cloud computing is that businesses can

concentrate on their core competencies rather than dealing with technology and IT requirements to meet business needs, such as licensing costs, server costs, storage space, and effectively secure software assets by leveraging cloud computing (Khadija SABIRI *et al.*, 2015).

Through migrating legacy applications to the cloud, businesses can enjoy the benefits of cloud computing. However, the truth is that legacy application principles make application migration a difficult task because it is not as simple as it appears, particularly when migrating a tightly coupled legacy application. There are many questions, both technological and non-technical, until moving legacy applications to the cloud as part of the migration process, it is essential to think about and prepare in depth.

Traditional software principles and approaches are significantly different from cloud computing concepts and approaches. In contrast to legacy applications, cloud applications cover all application layers, including application (SaaS), platform (PaaS) and infrastructure (IaaS), making legacy application migration a more difficult task than it seems, particularly when migrating tightly coupled legacy applications as compare to cloud application. (Rashmi *et al.*, 2012; Stavros *et al.*, 2013), (Muhammad Aufeefet. *al.*, 2012; Jesus Bisbalet. *al.*, 1997).

II. PROBLEM STATEMENT

A well-planned strategy is required for legacy application migration, as there may be many technological and business issues to address before the company begins the application mitigation process. If an organization does not carefully prepare, implement, and track the migration process, all of the effort, time, and resources will be wasted, and the desired results will not be achieved. Flexible structure, in the sense of the proposed framework, means that it should be able to

accommodate or be adapted as required by a migration project or business.

III. MIGRATION PROCESS

At a high level, it is clear that migrating to a cloud environment is a highly complicated process that involves meticulous preparation and processes in order to be efficient. This is because cloud computing introduces economic, legal, and security changes. (Barn McDavittet. al., 2013) etc. Proposed framework is named as “Legacy Application Migration Process Framework to Cloud”; referred as LAMP2C. Since there is no one-size-fits-all solution to legacy application migration, a repeatable process structure for legacy application migration that can be modified according to the organization IT landscape is needed. Legacy application migration is a major move toward transitioning legacy applications to the cloud, and it necessitates significant upfront thinking and in-depth preparation to ensure efficient resource utilization and risk management, on-time and within budget execution, and ultimately operational performance. (Sanjeev Kumar Yadav et al., 2014), (Barn McDavittet. al., 2013). Since cloud computing brings changes such as economic, legal, and security, application migration is a journey that requires thorough, comprehensive preparation to ensure a successful migration. As a result, it's critical to comprehend the reasons for, or

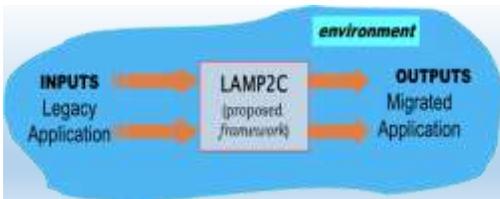


Figure 1: LAMP2C Block Diagram with Input and Output

trigger points for, the introduction of new technology, which is nothing more than the initial thinking of migrating from current applications technology to targeted technology. (Barn McDavittet. al., 2013) etc.

Migration is caused for either business or technological reasons. In any case, a detailed portfolio analysis must be performed to determine a candidate application for migration before and until the need to move an application or collection of applications arises at the last minute. Once a candidate application or application portfolio is selected for migration, for cloud migration, it must move through the migration framework. The output will be sent to the migrated application. LAMP2C serves as a one-stop shop for the migration process, addressing all migration-related activities and assisting in the execution of a fast migration process with

a simple and hazard-free migration route. It can be used to assess and increase the efficiency of business migration processes.

Pre-migration Area - This framework area contains all tasks that must be done prior to the start of the actual migration. In the pre-migration phase, the organization must consider the application migration as a whole, taking into account all of the variables. It will assist organizations in viewing and analyzing their current IT environment or portfolio in depth, which has evolved over time, so that stakeholders can make well-informed decisions.

The Pre-Migration region is the first and most important part of the LAMP2C architecture, and it serves as the starting point for the migration process (Juncal Alonso et. al., 2013). The initial evaluation made before embarking on the journey of actual legacy application migration is critical to the success of any migration project. During the pre-migration process, an organization must conduct a comprehensive evaluation to decide if migration of legacy software to the cloud is economically feasible and advantageous, or whether another approach is needed. (Juncal Alonso et. al., 2013). Failure to discover dependencies or gaps at a high level will jeopardize the project's viability.

Migration Area - The LAMP2C framework's migration area is the framework's second and most active area. It is referred to as the "heart" of the LAMP2C system since actual migration will take place in this region from beginning to end, from the Discovery and Preparation phase to the Go-Live phase.

Post-Migration Area – Activities that must be completed after the actual migration are grouped together in this section of the framework. The activities in the Post-Migration field are focused on the decisions and actions taken in the framework's first two fields, namely Pre-migration and Migration.

Area of Governance - Governance is crucial in all three aspects of the migration framework. The system of rules, practices, and processes by which an organization is guided and governed is referred to as governance. The governance team will be in charge of monitoring the migration progress across layers. The governance region intersected with the other three system regions.

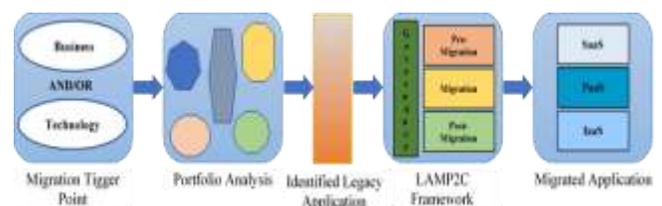


Figure 2 - Legacy Application Migration Process



Figure 3 - Governance Benefits

The migrated framework must be thoroughly checked end-to-end with all data, including old data, new data, or a mixture of the two, old features (unchanged features), and new features (if any), to ensure that existing functionality is validated and new or updated functionality is tested. It encompasses both the functional and non-functional aspects of the software. If testing does not fit the test cases created, the method must be reverted to the Implementation phase, where the missing feature or part may be introduced in accordance with the original framework.

When the migrated application is placed into production in a cloud environment, it will be officially available for users to use, according to the migration strategy envisioned in the pre-migration region and in line with the enterprise's mission and vision. If Go-Live fails for whatever reason, it would be a big loss for an enterprise because of all the work and time put in by various teams to migrate legacy applications. It will also have an impact on the company and its growth.

The level of governance is dictated by the enterprise's needs, which are focused on project size, expense, and criticality. In general, effective IT governance necessitates a multi-level, multi-functional governance system. (Dr. Gad J Selig, 2011), Since moving an application to the cloud increases governance complexity and effectiveness, it must be adaptable and flexible to the project or business requirements. Complexity grows as service providers gain ownership of many of the roles that were previously performed by the enterprise. LAMP2C-GOV

assists the team in avoiding problems or obstacles and implementing the best solution for the business. In addition to making the best use of resources (Dr. Gad J Selig, 2011). When a company has several projects going at the same time, the best use of resources can be seen. Bad governance, on the other hand, can derail even the well-planned project and reduce the chances of the migration project fulfilling the business vision and goal.

IV. CONCLUSION

Governance is a critical component of the LAMP2C architecture, and it is recommended that it be included in the Master Migration Strategy and Plan. Since legacy migration initiatives are business critical, and since the organization has so much invested in migrating software to new systems or technologies, governance becomes even more important, many stakeholders must be considered, and an in-house programme is being moved to the cloud, where control would be different than before. Enterprises that effectively enforce governance through MGB across three areas of migration and consistently apply governance laws, practices, and processes at various stages of migration project can increase the chances of successfully transitioning applications in accordance with the business vision MGB will be in charge of keeping track of the migration progress across layers and approving it. It emphasizes how governance aids every project in optimizing its business value.

REFERENCES

- [1] Ali Khajeh-Hosseini, Ian Sommerville, Ilango Sriram, "Research Challenges for Enterprise Cloud Computing."
- [2] Sanjeev Kumar Yadav, Kavita, "Legacy application migration governance, International conference on research trends in engineering, applied science and management", ISBN: 978-93-87433-40-3, 166-170, 2018.
- [3] Doaa M. Shawky, Jan. 2013, "A Cost-effective Approach for Hybrid Migration to the Cloud", International Journal of Computer and Information Technology.
- [4] Jesus Bisbal, Deirdre Lawless, Bing Wu, Jane Grimson, Vincent Wade, Ray Richardson, D O'Sullivan, 1997, "An Overview of Legacy Information System Migration", Asia-Pacific Software Engineering Conference.
- [5] Rashmi, Dr. Shabana Mehrez, Dr. G. Sahoo, "A five-phased approach for cloud migration", International Journal of Emerging Technology and Advanced Engineering (IJETA), Volume 2, Issue 4, April 2012.
- [6] Dr. Gad J Selig, "Implementing IT Governance—A Pocket Guide", Oct. 2011.
- [7] Steven De Haes, Wim Van Grembergen, "Analysing the Relationship Between IT Governance and Business/IT Alignment Maturity", Hawaii International Conference on System Sciences, 2008.
- [8] Razvan and Ioana Beleiu, "Approaches Regarding the

Dimensions of Project Governance”, International Management Conference, Bucharest, Romania, 2014.

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