Optimizing Resilience When Migrating Legacy Apps to the Cloud

Introduction

One of the principal advantages of platforms like SAP resides in their integrity, reliability and resilience. These attributes garner considerable appeal for hosting mission-critical data and workloads within enterprise environments. Conversely, the Cloud is lauded for its exceptional flexibility and scalability, with its cost-effectiveness rendering it a desirable alternative to traditional hosting platforms.

Consequently, enterprises find themselves confronted with a pertinent question: how can they amalgamate the resilience inherent in legacy application platforms with the multitude of benefits offered by Cloud?

This answer lies in meticulously migrating legacy workloads to the Cloud, ensuring resilience is prioritized at every point of the process. As this eBook explains, integrating resilience into the migration process is not inherently organic. By implementing astute measures before, during, and after the Cloud migration, enterprises can attain a balance of resilience and flexibility.

Such a desirable equilibrium enables organizations much more opportunities for leveraging advantages from the Cloud, while preserving the resilience of legacy platforms.

What is Resilience?

Before delving into best practices for building resilience during the migration of legacy applications, it is important to understand what is meant by resilience.

At its core, resilience is the ability of workloads to remain available and perform regularly and successfully during strenuous operations, even when confronted with unexpected disruptions, like server failures or application crashes.

Legacy platforms are endowed with a myriad of intrinsic resilience features. These include the capacity to integrate redundancy into the infrastructure, thereby preventing the failure of one component from slowing the workload, and the aptitude to isolate applications to reduce the risk of a problem of one application's issues affecting others. Such features are integral to why enterprises have historically gravitated towards legacy application platforms for managing critical workloads.

On balance, modern public Clouds possess resilience capabilities, too, like the option of mirroring workloads across multiple availability zones to augment their reliability. However, resilience features in the public cloud are usually not enabled by default, and many come with added costs and trade-offs.

Therefore, when you migrate legacy apps to the Cloud, it is essential to undertake calculated measures to ensure resilience. Simply moving to the Cloud and choosing the default configurations is no guarantee that your apps will prove resilient against various disruptions, such as VM (Virtual Machine) crashes or insufficient resource allocations during times of peak demand.

Resilience at All Stages of Cloud Migration

Building resilience into legacy applications when they're migrated to Cloud requires action during each of the three stages of migration: During planning, during migration and after the migration is complete.

Pre-Migration and Resilience Planning

In many ways, the pre-migration stage is paramount for purposes of resilience, given that the decisions made regarding the migration of the application to Cloud and how to operate it once it is there bear significant implications for its resilience.

Start the planning process by assessing your application's current needs, inclusive of those related to resilience. For example, what extent of downtime can you tolerate from the app? Which types of processing power, storage and other resources are requisite to operate it reliably? To what degree does the app load vary, and is this acceptable to your migration strategy?

Contingent on the responses to the queries mentioned above, choose an appropriate cloud architecture for hosting the app. Is the strategy to lift-and-shift the application into a Virtual Machine (VM) instance on a public cloud service like Amazon EC2? Or will you refactor it to take advantage of microservices architectures and container-based cloud hosting services, such as Amazon EKS? Will you leverage options like deploying the app across multiple availability zones, acknowledging that while this enhances resilience, it typically incurs added costs?

Finally, upon determining how you'll run your app in the Cloud and understanding the requirements for the migration, identify the necessary tools and processes that will enable the migration process. All major public cloud providers offer tools for lifting-and-shifting on-prem apps into their Cloud environments. However, should there be plans to refactor your app or make major changes to its architecture, it may be necessary for a more direct approach.

Resilience During Cloud Migration

Throughout the actual migration, your goal should be the assurance of resilience by monitoring the migration process continuously and maintaining preparedness to address any arising issues. If data that you transfer to the Cloud fails to upload, for example, immediate notification will be imperative so that a restart of the transfer or a shift to alternative migration strategies will minimize unnecessary downtime (such as converting the data to a different format to work around transmission errors).

Likewise, be sure to have playbooks in place to facilitate quick responses in the event of complications. Successful migrations also need experienced staff who understand both legacy applications and Cloud environments who can predict and minimize any unexpected issues that arise during migration.

Post-Migration Resilience Optimization

Successful migration to Cloud doesn't mean the resilience mission has been successfully completed. On the contrary, even if the Cloud architecture you chose is inherently resilient, there are opportunities to enhance resilience further after the migration.

This is where practices such as ongoing workload monitoring and auditing become pivotal. These processes provide data that can be scrutinized to identify anticipated resilient levels. For example, monitoring might reveal a higher incidence of errors during peak loads than initially anticipated. Taking steps to mitigate those errors would likely improve application resiliency. Similarly, an audit might surface insecure configuration settings, potentially exposing the application to compromising attacks.

Equally important is ongoing application management and maintenance. Be sure that the application and the hosting Cloud infrastructure are regularly patched using tools such as AWS (Amazon Web Services) Systems Manager, Azure Update Management and Google Cloud OS Config.

Finally, be sure to monitor Cloud hosting costs to verify that the investment in resilience capabilities—such as redundant VM instances—is aligned with budgetary expectations.

A Resilient Cloud Migration

Shifting applications to Cloud doesn't automatically guarantee strong levels of resilience. The opposite can happen if you migrate an app from a legacy platform to a Cloud without factoring in resilience requirements.

By putting resilience at the forefront during each phase of Cloud migration – before, during and after – you can achieve an app that maintains its robustness, all while reaping the benefits of the cloud's flexibility, scalability, and cost-efficiency. This balance is precisely what successful application modernization aims to accomplish.

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About Lemongrass

Lemongrass is a software-enabled services provider, synonymous with SAP on Cloud, focused on delivering superior, highly automated Managed Services to Enterprise customers. With a unique combination of experience, expertise and best practices designed to deliver the desired outcomes from an SAP transformation, Lemongrass engineers strategies and services that enable the economics, scale and agility of hyperscale computing while unlocking business innovation and controlling the risks and uncertainties. Lemongrass Cloud Platform (LCP) enables near zero downtime migrations to Cloud and differentiated Managed Services for SAP and its related workloads. Our customers span multiple verticals and geographies across the Americas, EMEA and APAC. We partner with SAP, AWS, Microsoft, Google and other global technology leaders.