CLOUD REPATRIATION: MOVING DATABASES OUT OF THE CLOUD

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PREFACE

The promise inherent in new paradigms can often be the impetus for making major decisions in the business world. Companies want to take advantage of any perceived method of becoming more productive and gaining a competitive edge over their rivals. A majority of organizations are also searching for ways to control costs while maintaining the levels of service and performance that their customers require and expect.

Cloud computing models have become popular with large and small businesses in many market sectors. Migrating all or part of a computing environment to public cloud service providers is an attractive route that offers multiple potential benefits for participating companies. Gartner forecasts that the global market for public cloud will top $266 billion in 2020 for a 17% increase over the previous year. The public cloud market is doing well and continues to attract new customers. It shows no signs of slowing down soon.

Unfortunately, not all cloud migrations wind up providing the expected benefits. A migration may be re-evaluated when it is time for a contract to be renewed. It may also be reconsidered for unforeseen issues that arise with an organization operating from a cloud model. This can cause the decision to repatriate databases by bringing them back from the cloud and hosting them in an on-premises data center. We will look at the journey a database can take to the cloud and back home again. Cloud repatriation for their databases is a better strategy for some enterprises than leaving them in their cloud environments.

WHY DATABASES
ARE MIGRATED TO THE CLOUD

The decision by organizations to migrate databases to the cloud can be made for a variety of reasons. One or several of these factors may interest a particular business when making the move from their data center to a public cloud provider.

Cost - When faced with the prospect of the capital investment necessary to upgrade hardware or software resources, the cloud can appear to be a very attractive option. When a database is hosted with a public cloud provider, the responsibility for maintaining the computing infrastructure is shifted away from the customer. These savings can pose a substantial financial incentive to perform a cloud migration.

Flexibility and scalability - Developing business requirements often demand modifications to an organization's computing environment. Engaging a cloud service enables companies to take advantage of the provider's resources to implement quickly new systems or expand the footprint of existing solutions. For example, the amount of storage and capacity a database requires can experience seasonal fluctuations that can be addressed by scaling up and down with cloud resources.

Security - Data security is a critical concern for all information technology (IT) decision-makers. Rather than invest in the technology and manpower to protect its data assets, an enterprise may opt to hand the responsibility over to a cloud provider. A reliable provider should offer a top level of security for an organization's systems and their associated data.

Simplicity - It's much easier to ask a cloud provider to make infrastructure changes than it is to perform planning, execution, and change management internally. When human IT resources are not readily available, this can be an important factor in choosing to migrate enterprise databases to the cloud.

Access to technical expertise - The pace of technological change that affects IT environments can put unreasonable demands on an organization's technical resources. A cloud provider may offer verifiable expertise to fill the knowledge gaps that can plague a company. Such gaps result in less than optimal use of technology.

PROBLEMS ENCOUNTERED
IN DATABASE CLOUD MIGRATIONS

The considerable benefits available by migrating databases to public cloud providers have influenced many management teams to take advantage of their offerings. Most times, this has led to a productive collaboration between an enterprise and its provider, with both parties expressing satisfaction in the partnership. But the results of migrating databases to the cloud do not always meet the customer's expectations.

Dissatisfaction over the agreements made with a cloud provider can occur for many reasons. Solutions that at one time appeared to be an inviting oasis to host critical databases can evaporate like a mirage. Sometimes the potential advantages do not work out to the same degree as promised by the provider's sales pitch. Here are some issues that may affect an enterprise's satisfaction with their decision to move databases to the cloud.

Cost - The financial advantages of cloud migration may not be as substantial as customers expect. This is true in data storage. As the data resources of an organization grow, its storage requirements do as well. While the cloud offers a virtually unlimited amount of storage space, it does not come without a price.

What was once a manageable monthly storage bill can quickly become a financial liability. Many organizations have realized that the capital savings enjoyed by a move to the cloud are negated by the rising storage costs. Even if new systems are not introduced, additional data streams can make it necessary to adjust the budget allocated for enterprise storage.

Data access - Another problem that can crop up with cloud data storage is the ability of an enterprise to access its information. There are latency problems with accessing and transferring enormous volumes of data from cloud storage when it is needed by on-premises systems. The delays caused by waiting for large datasets to arrive can cause operational problems and affect the environment.

Security - Handing over the responsibility of securing a computing infrastructure to a public cloud provider may seem reasonable at first glance. The provider should use innovative technology and supply the expertise needed to keep databases protected. There have been many cloud-based data breaches that may cause an organization to rethink the way they treat security. Many recent data breaches have resulted from mis-configured databases that may have been handled more effectively by in-house database teams.

Using cloud providers exposes databases and the valuable data they contain to an expanded population of potential security leaks. Issues such as who controls the encryption keys protecting data resources can be problematic when information lives in the cloud. It is an inescapable fact additional actors can compromise that data hosted in the cloud when compared to hosting it on-premises.

Regulatory and compliance issues - Maintaining and showing compliance in today's complex regulatory environment can be complicated by introducing cloud providers into the mix. The provider, the customer, or a combination of both parties may handle day-to-day operational concerns over data privacy. This can make it difficult to provide compliance evidence to address auditors' requests and to identify where the breakdown in implementing standards occurred.

The final responsibility for regulatory compliance rests with the customer. They will be liable for the financial and public relations effects of a data breach. They may also decide that they need to exert more control over how compliance is enacted. Repatriating databases extends this desire.

Performance - Mission-critical applications must be optimized and provide consistently top levels of performance. The speed and efficiency required by these systems may make them poor candidates for the cloud. This is true for applications that need extensive input and output (I/O) resources for an extended time and those that are sensitive to latency issues. Maintaining peak performance can be a major reason for considering the return of databases to an organization's data center.

Shadow IT - The ease at which systems can be added to a decentralized cloud computing environment can lead to the emergence of shadow IT. These are systems that were not in the original migration plan and may be out of the control of the cloud provider or customer. Problems associated with shadow IT include additional costs, duplicate functionality, and potential violations of security and privacy regulations. Inventorying systems as they return from the cloud can identify shadow IT resources that should not be brought back to the data center.

An underlying characteristic of many failed migrations is a lack of initial planning when considering a cloud solution to address enterprise IT requirements. Without a proper assessment of its migration strategy, an enterprise will often be disappointed with the results.

Before embarking on cloud migration, the business goals driving the activity need to be understood. Failure to define what a company hopes to achieve when migrating databases or other systems to the cloud gets the endeavor off to a poor start. It will be hard to recover from such troubled beginnings.

REPATRIATING DATABASES
BACK TO THE DATA CENTER

Repatriating databases from the cloud to an on-premises data center requires the same level of planning that should have gone into the migration to the cloud. Sometimes, returning specific databases to an in-house data center is caused by the poor planning that migrated the database to the cloud. Cloud repatriation enables an enterprise to make amends for some poorly thought out decisions regarding how it hosts its databases.

When an organization needs to repatriate database instances hosted with public cloud providers: Here are the considerations and steps that need to be taken to ensure the best chance for a successful migration.

Identifying the systems for cloud repatriation - Databases are not all of equal importance, nor do they hold the same type of information. There may be compelling reasons that have either suddenly manifested themselves or were initially overlooked that make a specific database a prime candidate for repatriation.

- Security issues revolving around the data in a particular system can make them more suited to the additional control in an on-premises data center.

- Databases that should be under consideration for repatriation are: Databases that have shown the need for continuously increasing storage capacity and are affecting the cost of doing business with a cloud provider.

- Mission-critical databases that demand specialized support can benefit from being housed in a corporate data center.

- Databases evolve and it is very possible that compliance issues now affect systems that did not contain sensitive data. To reduce the complexity of remaining compliant, these systems are also suitable candidates for repatriation.

- Mature applications and databases are less likely to benefit from the flexibility and scalability of the cloud. Since their resource usage can be gauged more precisely, they also make a suitable fit for an on-premises data center.

Unless an organization is completely migrating away from the cloud, decisions need to be made regarding which databases make sense to move. If the goal is to reduce cloud expenses, looking at the systems with the largest footprint is a good place to start.

Data modeling - Creating logical and physical models of the databases that will be repatriated is required when preparing the environment for the return migration. The resulting models will help inform whether to keep or change the platforms being used in the cloud.

Comparison and synchronization - Database repatriation is just another kind of migration. For that reason, all the tools and best practices that would be used for any database migration apply when repatriating systems. This includes performing an in-depth database comparison and synchronization before, during, and after the migration.

Providing for physical data movement - Based on the volume of data that will be migrated, it may make sense to use offline media to move it. Capacity considerations may make it impossible to move enormous amounts of data over the network in some situations.

Repatriating databases is a practice that is growing in popularity along with the increasing demand for public cloud services. Organizations are learning to use the cloud in the most efficient ways to address their business needs. For such cases, the one size fits all approach to migration needs to be reconsidered. Repatriating a subset of an enterprise's cloud databases can cause substantial financial savings, better performance, and more secure data resources.

IDERA'S SOLUTION

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