



Migrating SAP® to the Public Cloud

What You Need to Know

IT modernization and agility are critical for organizations around the world. According to McKinsey, cloud-computing adoption has been increasing rapidly, with cloud-specific spending expected to grow at more than 6 times the rate of general IT spending through 2020. Their latest report, *Unlocking Business Acceleration in a Hybrid Cloud World*, revealed that 50% of all workloads are already running on public- and private-cloud platforms.

Enterprise migration to the public cloud is still in its early stages, but statistics like these show the pace of migration is accelerating. According to IDC, worldwide spending on public cloud services and infrastructure will more than double over the 2019-2023 forecast period.

The logical argument for public cloud migration has always been strong. The business model alone is compelling – moving from a capital-expense to a “pay-as-you-go” model makes life much simpler and more efficient.

However, it’s taken some time for public-cloud providers to evolve their infrastructures and management tools to a level where medium- and large-sized enterprises could gain confidence in their ability to achieve the required levels of performance, availability, security and transparency for important business applications. This left many SAP customers wondering: **Is the public cloud right for me?**

What are my options?

Most organizations are very familiar with the costs, overhead and challenges associated with building and running an on-premise data center, not to mention the order-of-magnitude costs and challenges associated with acquiring and certifying an on-premise HANA environment. If this traditional approach doesn’t fit the forward-thinking strategy of the organization, two primary outsourced models exist: hosted private cloud and public cloud.

A hosted private cloud with a managed service provider can provide a similar operational model to an on-premise deployment, except for the capital investment. The right managed service provider can offer a full range of infrastructure hosting, security and application managed services to ensure a high level of production availability and responsiveness. If this model is not a good fit, or there is a desire to consolidate IT workload processing in the public cloud, then it is worth considering the public cloud for mission-critical enterprise workloads (such as SAP) as well.

Why the public cloud?

As mentioned earlier, the logic behind public cloud migration is clear. Let’s assume you’re upgrading to SAP S/4HANA. In the on-premise world, you’d need to undergo an extensive hardware refresh to properly support the system. For the typical midmarket enterprise, this type of refresh can cost upwards of \$250,000, and for large enterprises it can be an order of magnitude larger.

In a public-cloud environment, however, you would not have these concerns since the infrastructure is provided as a service, and you only pay for what you consume. In other words, by moving to the public cloud, a large potential capital expense (CapEx) becomes a much more manageable operating expense (OpEx).

This ability to upgrade software without a commensurate hardware investment comes as welcome news to enterprises. It can greatly speed an SAP upgrade, since there is no need to await approvals on a large capital expense. There are ancillary benefits as well. For example, if you no longer need to procure and manage server and storage resources in-house, you also no longer need the specialized skills to manage those resources. This enables a re-allocation of IT personnel from “keeping the lights on” activities to more strategic projects. Additionally, with its massively distributed and redundant infrastructure, the public cloud typically provides greater performance, reliability and scalability than is possible in on-premise implementations.

Public cloud challenges

Of course, there's no such thing as "all good news" in IT, and the public cloud is no exception. While the benefits of the public cloud are compelling, there are also significant challenges that must be met, in order to have a successful SAP implementation.

- **Financial Challenges**

The first mistake many enterprises make when migrating to the public cloud is overestimating the cost savings. While it is true that the public cloud relieves enterprises from having to invest in expensive hardware infrastructure, it is also true that managing business-critical applications in the public cloud requires personnel and partners who understand how to navigate the landscape and keep applications running at peak efficiency. This navigation not only includes system monitoring and management; it also involves working with the cloud provider's personnel to resolve any issues related to the underlying infrastructure. This can offset the long-term cost-savings of public-cloud deployment, so it is important to value the public cloud's superior business model, as well as its performance, reliability and scalability advantages, over any perceived cost savings.

Additionally, while the transition from CapEx to OpEx provides great advantages, enterprises need to monitor their public cloud activities carefully to avoid unexpected costs. For example, over time it's easy to fall victim to "workload sprawl," where lack of "housekeeping" around storage and compute requirements results in enterprises paying for unnecessary resources. This can dramatically escalate the cost of using the public cloud. This problem is avoidable, but it requires dedicated and vigilant monitoring of cloud resource consumption.

- **Data Sovereignty**

It is critical for public-cloud providers to support appropriate transparency into customer deployments, so they can gain a holistic view of system status and performance. Nowhere is this more important than with data management.

Ironically, one of the most attractive aspects of the public cloud is the resiliency provided by a massively distributed and redundant infrastructure. However, this infrastructure can also create a significant risk to multinational enterprises: understanding where data is located.

Privacy laws vary from country to country, and many countries today mandate that customer data cannot be stored beyond their jurisdiction. This means enterprises cannot simply leave it up to the cloud provider to decide where data will be stored – there need to be service agreements in place to ensure that data is stored in a way that complies with local regulations. The good news is, the large public-cloud providers have built out their infrastructures to the point where it is highly likely there will be an in-country data center for local storage. However, these same providers must provide enterprises with visibility into the geographic location of all data – including production data, backups and archives – so they can ensure compliance on a global scale.

- **Security and Compliance**

In addition to understanding the location of data, enterprises need to have sufficient security capabilities in place to maintain control over that data. This is particularly true in regulated industries where lack of control over data is a non-starter, due to compliance concerns.

In the context of SAP deployments, public cloud providers need to provide capabilities such as end-to-end encryption, along with identity and access management controls, to be a viable option for enterprises. Management procedures for cloud security should be similar to those of internal systems, and there should be an effective incident-response process in place for any security events detected by the cloud provider.

Ultimately, security is a shared responsibility between the public cloud provider and the client. Getting alignment and clarity of roles on both sides, along with the monitoring tools to ensure those roles, is a critical consideration for public cloud deployments – particularly among enterprises in regulated industries.

- **Performance Issues**

Unlike telecom and other traditional service providers, there are no service-level agreements among public cloud-providers. Even though the large providers have massively scalable and redundant infrastructures, there are occasional outages that make the headlines. Beyond the headlines, there are always performance issues from time to time with complex applications like SAP, regardless of the production environment. In the public cloud, enterprises need to be able to resolve these issues in conjunction with the cloud service provider, which can be a tricky dance if the enterprise does not understand how to navigate the cloud provider's support organization.

The first step to mitigating performance issues is to understand your organization's appetite for them. Will an occasional slowdown or even outage have a profound material impact on your business, or will it simply be an annoyance? The answer to that question can help to inform the right public-cloud strategy – pure cloud or hybrid. For organizations with a high tolerance for performance issues, pure

cloud is a relatively easy decision. For those with more demanding requirements, they could keep critical data and application components on-premise or in a hosted private cloud while putting less critical resources in the public cloud, at least until they have enough experience with the public cloud provider to understand if there are any performance disparities between cloud and on-premise.

Beyond that, enterprises need to implement performance-management strategies similar to those used on internal systems. They need to establish performance benchmarks for public-cloud-based applications and resolve issues as they arise before they become disruptive. Establishing this kind of performance monitoring will require tools and expertise beyond those offered by public cloud providers, which tend to be high level and do not provide the granular diagnostics required to identify the root cause of performance issues.

Management Issues

As mentioned earlier, complex applications like SAP periodically have performance issues in any environment. Resolving these issues is more complex when deployed in a public-cloud environment, simply because there is an outside party responsible for the infrastructure part of the equation. For this reason, it is important to have people and processes in place to harmonize public cloud provider and internal teams, so issues can be resolved as quickly as possible.

In most cases, this “issue response” effort takes the form of an alert activating a team to diagnose and resolve the problem. Creating this process should involve multiple constituents, including network engineering, cloud engineering, backup/disaster recovery engineering, as well as all relevant managed-services consultants. There needs to be one or more people who have a “hotline” into the public cloud provider, to ensure prompt resolution should a performance issue be diagnosed as infrastructure-related.

Getting Started in the Public Cloud

The first step toward moving to the public cloud is to build your business case. As with any other major IT initiative, it is important to understand the full range of costs, risks and benefits before moving forward.

Key elements to consider include:

OpEx and CapEx - Understand the long-term financial impact of moving to the public cloud. CapEx is relatively easy to calculate. OpEx can be a bit trickier, because it's important to fully understand which skill sets can transfer from an on-premise world to a public-cloud world, and which new skill sets will be required, either from employees or partners, to ensure a smooth transition and ongoing operation.

Security and Compliance - For enterprises in regulated industries, it's important to seek out a public cloud provider that can provide the transparency and control over data required to ensure appropriate levels of security and compliance. In situations where this may be questionable, a hybrid-cloud approach could be appropriate.

Timing - There may be natural inflexion points where it makes sense to migrate to the public cloud. For example, upgrading enterprise software often requires a commensurate upgrade of server and storage hardware. Obviating that capital expense makes migration to the public cloud extremely attractive. Many SAP customers are encountering this exact situation with the upgrade to S/4HANA.

How much cloud? - Public-cloud migration is not an “all or nothing” proposition. For enterprises looking to take a phased approach to public cloud adoption, a hybrid-cloud implementation can be a sensible first step.

An experienced, certified partner can ensure long-term cost and performance optimization by managing important functions such as:

Database Tuning

The database can have a profound impact on system performance. Implementing custom configurations and settings based on the specific implementation can ensure optimal performance at all times.

Patch Management

Unpatched applications remain the most common point of security vulnerability for enterprises. Having a dedicated resource focused on patch management can dramatically reduce the “attack surface” available to potential security threats.

Configuration Management

Tracking and managing application configurations is an ongoing process, since a variety of factors can change application settings. When this activity creates a bad configuration, it can cause performance problems or even outages both in the application itself, and interdependent applications.

Software upgrades

Upgrades in complex applications like SAP can cause system instability both in the upgraded application and its interdependent applications. Proper preparation and management of upgrades is required to prevent service interruptions.

Application performance monitoring

In the public cloud, it's important to be able to identify the source of application performance issues quickly and accurately, and to have ready access to service-provider technical teams in the event the problem resides in the infrastructure.

As part of the cost/benefit equation for public cloud, it is wise to include considerations for a third-party partner who can assist with public-cloud migration and management. Partnering with professionals who have “been there, done that” can help organizations avoid potential landmines associated with the public cloud. They also can ensure long-term cost and performance optimization by managing important functions such as database tuning, application and security patches and settings, software upgrades, and application performance monitoring.

Ideally, such a partner will combine deep experience managing SAP implementations, with demonstrated public-cloud expertise. One of the best ways to test the latter qualification is to seek out partners that hold certifications from the large public-cloud providers. Having an experienced, certified partner can ensure that your journey to the public cloud meets or exceeds the projected benefits from your business case.

Public Cloud Adoption: It's “when,” not “if”

Moving SAP and other mission-critical applications into the public cloud can seem daunting, but much of the perceived risk in the process can be mitigated by working with partners that have certified expertise in public cloud migration and management. Many organizations are taking a phased approach toward migration, first starting with a hybrid cloud migration and gradually moving to all cloud. This can be a way for organizations to begin realizing the benefits of the public cloud, while maintaining the most sensitive data and other assets in house.


Regardless of how enterprises move to the public cloud, the trend has progressed from trickle to flood. The wave of new deployments will become further proof-points for the public cloud infrastructure, which will permanently drive the public cloud from “early adopter” to “mainstream” status. As a result, for most SAP customers and enterprises in general, the question is “At what point is the public cloud right for me?”



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