



# SAP on AWS: Optimize costs in 5 steps

## **How businesses can reduce TCO using the AWS Cloud**

Businesses that are thinking about migrating their SAP workloads from an on-premises environment into the cloud generally start with a detailed risk analysis. Alongside security and critical systems, many IT managers' main concern is infrastructure costs, as well as the cost of maintenance and management. They want to know how and to what extent they can keep these to the bare minimum.

This white paper outlines five core aspects that need to be considered when analyzing total cost of ownership (TCO) in the Amazon Web Services (AWS) cloud in order to realistically forecast the financial implications of switching to AWS.

► **Base your calculations on a 5-year plan**

Calculating the usage costs for a SAP system when analyzing TCO generally focuses on a five-year timeframe. That is the average length of time needed to make relevant changes within a SAP landscape. The changes include purchasing new hardware, updating your SAP application version, migrating to a new technology platform and switching to a different database system (e.g. SAP HANA).

## TCO analysis: these 3 cost areas are key

With many different reliable factors that directly influence the actual total cost of the SAP system, TCO can be calculated in great detail. Internal factors specific to your business that depend on your requirements and usage also play a role. If you want to look at what costs have the biggest impact on your SAP system and how these will develop over the lifetime of the SAP platform, we can point to three main areas:

### 1. Hardware costs

These include the costs of racks, servers, storage, power, back-ups, firewalls and all of the components, rooms and additional services that are needed to ensure optimal performance of the overall system (data center, air conditioning, power supply, access controls, etc.). If you are switching to SAP HANA, the underpinning in-memory technology will push these costs up further.

### 2. Software costs

These comprise all of the costs that are incurred by the software used to operate the infrastructure. They include operating system licenses, virtualization software, storage management, HA (high-availability) solutions, DR (disaster recovery), firewalls and much more.

### 3. Infrastructure maintenance and support costs

All of the support and maintenance agreements concluded with the various vendors, as well as the costs of governance, infrastructure management, operation, improvement and continuous development come under this item.

These can be broken down in further detail:

#### 3.1. Governance and infrastructure management costs

You also need to take account of staff costs and planned downtime for maintenance purposes or unexpected loss of service, which may require repairs or hardware replacement. Other costs in this area include firmware and software updates for all of the components being used, as well as the overall time dedicated to managing the infrastructure. All of this effort is essential in guaranteeing that the SAP applications keep running in an optimum condition and offering full functionality to support the business processes.

#### 3.2. Operating costs

Here you need to consider energy costs, air conditioning and building-related costs, plus the costs of people and tools that allow you to use the infrastructure on a day-to-day basis. Costs for all activities relating to provisioning, administration and regular maintenance of systems, databases and applications must also be included, as well as security management, along with the costs of maintaining the capacity and availability of the infrastructure as a whole.

#### 3.3. Continuous development and improvement

This category consists of all migration costs (for SAP HANA), the addition of new functionality, and upgrades to the SAP systems over their entire life cycle.

All of the areas listed above mean that evaluating TCO of SAP systems as the basis for switching to AWS is a time-consuming task. The steps identified below can help IT managers to define and calculate a scope that will allow potential savings to be exploited in terms of cost optimization as part of a well-researched AWS transformation plan.

# 5 steps to optimizing the cost of SAP on AWS

## 1) Manage the technology change

One of the greatest barriers to technical progress is natural resistance to change. Every technical transformation starts with a willingness to overcome these reservations and to accept that the changes are an essential factor in allowing the business to survive in a highly competitive market. The use of cloud solutions, such as AWS Cloud in this case, might come up against resistance among the IT workforce if staff fear that the change could make their jobs or even their entire department obsolete. This worry is often found at all levels of the business's IT department, from systems administrators right up to the CIO.

Businesses need to meet these attitudes head-on and approach the new challenge with determination and focus. Managers recognize that technology and how it is used can give you a clear advantage over your competitors. Technologies such as big data, machine learning, internet of things (IoT) and Generative AI are drivers of digital transformation. And the cloud is the common technological foundation on which all of these are based. Using a public cloud solution does not necessarily mean that jobs or entire departments are surplus to requirements, however. Usually, it is an opportunity for further growth, both for individual employees and for the business as a whole.

## 2) Choose the right AWS architecture for the SAP system

Along with its global infrastructure, the AWS Cloud offers numerous services and functions that extend beyond the pay-per-use provision of virtualized infrastructure (IaaS).

AWS configuration services for SAP impact infrastructure costs directly, and system design is key when it comes to carrying aspects such as availability, performance, security and operations into the new environment. The design specifications for SAP solutions that have already been certified by SAP and AWS should be taken into account. The description of design specifications is also summarized in the AWS

Well-Architected Framework and should be verified by an AWS Solution Architect or an authorized partner.

There are many relevant services and AWS functions specifically for SAP systems that can be configured optimally to have a direct influence on infrastructure costs.

The chosen architecture must reflect the business's needs in terms of availability, performance, security, and operations. Therefore, it is essential that you devise an SAP architecture on AWS that is suited to your specific conditions and processes.



### 3) Optimize infrastructure costs

The architecture of a SAP-on-AWS solution relies on two core AWS services that have a direct impact on costs: AWS Elastic Compute Cloud (EC2) for compute power and AWS Elastic Block Store (EBS) for storage. Roughly speaking, you can assume that greater than 50 percent of the total costs will be incurred by these two services, while the remaining will be eaten up by back-ups, data transfer between AWS and your corporate networks, and other services.

AWS presents server instances in the form of virtual machines via EC2. Costs are structured through an on-demand model where you pay for what you use, with additional discount options that are available with reserved instances or savings plan commitments. In the first case, the customer commits to using one or more instances for a specific time (one or three years).

This commitment is rewarded with a flexible discount that depends on the contract length and level of upfront payment.

When using compute savings plans commitments, you agree a minimum usage per hour in US dollars, which also results in the application of a discount on the EC2 instances. The most suitable model will depend on your usage and rate of change of the system environment.

There is also the AWS promise to make reserved capacity available at all times. This is intended to reduce the risk that instances fail to execute due to a lack of resources. When your SAP system is particularly large, that is an important consideration for ensuring continuity of operations.

Given SAP systems generally operate around the clock, reserving compute capacity is a key factor in achieving cost savings, whichever model you select. But for systems that are not permanently online, AWS offers a no-commitments, usage-based model (on-demand). These systems can be stopped and started whenever necessary, and only generate compute costs when they are running. An analysis of your actual and planned usage is therefore extremely important when selecting which financial model to follow. Cost savings and flexibility need to be carefully balanced.

When you compare the costs of on-demand with Reserved Instances and Savings Plans, the average is around 40 percent usage. This means that the on-demand model is more cost efficient for systems that are used for less than this level per month over a longer period of time. Such situations are especially prevalent for non-production systems, temporary environments, special projects and training, to name just a few examples.

The cost of EBS – AWS disk storage – depends on the capacity, type of storage and IOPs. Finding the right option for a specific SAP system from this broad range of possibilities relies heavily on an assessment of the final costs.

In general, SAP systems are installed on standard SSD storage, since this provides the option of configuring a guaranteed performance baseline with provisioned IOPs for high-performance workloads. Smaller systems with lower usage can be configured with lower cost storage solutions that do not require high IOPs.



*“Savings for Reserved Instances and Savings Plans can slash the cost to between 30 and 75 percent of the price for an on-demand model, depending on the parameters selected by the customer.”*

Source: AWS website

When it comes to back-up storage, there are two methods/services available on AWS:

EBS Snapshots enable the back up of the data on your Amazon EBS volumes by taking point-in-time snapshots. Snapshots are incremental backups, which means that only the blocks on the device that have changed after the most recent snapshot are saved. This minimizes the time required to create the snapshot and saves on storage costs by not duplicating data. EBS Snapshots are inherent with the EBS storage service, but also require scheduling, management and maintenance.

S3 object storage service offers up to 99.999999999 percent availability and distributed data centers with a cost model that is based on the volume of storage provided in gigabytes. S3 based backups require tools, such as [Syntax's CxLink Backup for SAP Databases](#), to implement, manage, and maintain all backups as well as to manage and orchestrate restorations.

Both methods require special attention to be paid to the business's data retention policies to ensure that data is only kept for as long as necessary so that planned capacities are not exceeded. The type of back-up process can also be decisive in this respect. Nevertheless, the availability and integrity of backups must always be a priority. Syntax recommends ensuring that backups can be automatically copied across to another region, not least as part of a catastrophic disaster recovery plan. The data transfer, snapshot and S3 costs incurred by this must be included in the TCO analysis for the cloud, but such DR measures are often a significant increase in security for many organizations.

Finally, you should also consider improved scalability, which can be achieved with the AWS Auto Scaling service. This allows the number of instances to be adapted automatically according to resource and scope.

Obviously, this third step in optimizing the infrastructure costs requires a comprehensive analysis. This starts with the design of the custom architecture, which is based on demand and capacity, allowing Reserved Instances or Savings plans to be purchased accordingly with upfront payments as appropriate.



*“Automation offers huge potential for savings, potentially between 30 and 70 percent depending on the level of implementation and number of automated processes.”*

*“The Syntax SAP Automation Platform reduces provisioning lead time by up to 80 percent and cuts costs by up to 70 percent.”*

**Ricardo Casanovas**  
VP of SAP Product & Innovation

#### 4) Automate SAP

The cost of operating and administrating a SAP system plays a significant role in the TCO analysis. These include:

- The costs of staff, time and resources required to run the SAP systems throughout their life cycle
- Patching and updates
- System and data back-ups
- Disaster recovery and restores
- New implementations
- OS and database updates

These are just a few of the activities that have to be carried out during the life cycle of a SAP system.

AWS lets you help yourself to a fully automated infrastructure environment in which all infrastructure operations and configurations can be applied programmatically and through a range of APIs. This approach supports standardization and also automates processes in the SAP system. It reduces the time commitment required and keeps the resulting costs of every individual operations activity to a minimum, improving efficiency overall.

Of course, all of these automations need to be set up and enabled in the first place before you can benefit fully. This is a substantial body of work, but thanks to the SAP Automation Platform developed by Syntax, for example, the groundwork has already been laid. This platform supports the operation of SAP systems to automate infrastructure on AWS, accelerating provisioning lead times by up to 80 percent and achieving cost savings of up to 70 percent.

## 5) Measure, adapt, repeat

AWS features a very fast innovation process that unveils and introduces many new functions and services to the marketplace every year. These innovations can offer huge potential for improving TCO of your SAP systems. The rapid pace of development also means that features and measures that are beneficial today may no longer be needed in the future. One example of this is the continual development of EC2 instances with new generations of processors and increased compute power, usually at a lower price, or the introduction

of GP3 EBS storage offering improved throughput at better costs. All of these new features and functions can quickly be applied to the current SAP architecture to continually optimize the TCO while simultaneously improving system performance.

So, analyzing TCO is an iterative process that needs to be revisited and adapted regularly, for example when new functions and services come online that your business would like to use.

## Conclusion

Moving SAP systems from an on-premises environment to AWS gives organizations the opportunity to reduce TCO. The savings can even exceed the direct reduction in infrastructure operation costs, depending on the desired level of automation. However, achieving this demands in-depth knowledge of the AWS platform and the underlying SAP system.

Insight into future developments of both components is necessary to continually optimize cost savings.

And the task of establishing this expertise and embedding it within your business is by no means trivial, especially when it comes to permanently reducing costs. Choosing the right partner with the expertise is paramount for IT managers seeking fast, positive outcomes.

Consider an AWS Premier Partner like Syntax to help your organization choreograph the complexity of IT cost optimization.



### Why Syntax

Syntax provides comprehensive technology solutions as a globally trusted advisor, and application-management services to power businesses' mission-critical applications in the cloud.

With 50+ years of experience, 700+ customers, and more than 2,000 employees around the world, Syntax has deep expertise in implementing and managing ERP and other applications deployments in secure private, public, and hybrid environments.

Syntax partners with SAP, Oracle, AWS, Microsoft, and other global technology leaders to ensure customers' applications are seamless, secure, and at the forefront of enterprise technology innovation.



### Contact Us

[syntax.com/contact](https://syntax.com/contact)