DRIVING INNOVATION

AND BUSINESS VALUE WITH SAP® APPLICATIONS ON AMAZON WEB SERVICES

Introduction

To sharpen their competitive edge and generate new business value with relevant, differentiated products and services, organizations need to innovate faster.

To achieve that goal, they're turning to emerging technologies such as AI, blockchain, advanced analytics and the Internet of Things (IoT). In fact, in the Accenture Technology Vision 2019 survey of more than 6,600 business and IT executives, 94 percent of respondents said the pace of technology innovation in their organizations had either accelerated or significantly accelerated over the past three years[1].

The challenge: How to achieve this innovation in mission-critical environments like SAP® applications? Adapting at pace is tough. And flexibility can be particularly elusive for organizations running core enterprise applications such as SAP solutions in on-premises deployments, where making changes to the environment can take months.

To boost their agility, many companies are seeking to move their SAP applications to the cloud to take advantage of greater flexibility. What's more, the cloud model enables companies to lower capital outlay by swapping hefty upfront capital investments for affordable monthly fees.

But how do you know which cloud provider and implementation partner to choose? If you make the switch, will your business-critical SAP solutions remain up-and-running with low response times? How do you migrate your core enterprise applications without disrupting the business? And how does adoption of the cloud allow you to pivot to new and emerging technologies?

This paper outlines why Accenture and Amazon Web Services (AWS) together offer a compelling solution for optimizing SAP applications in the cloud. In particular, it explores the advantages around:

- Business resiliency
- Security
- Lowering costs – including potential annual reduction in total cost of ownership (TCO) of up to 40 percent
- Access to cutting-edge automation technology
- Scalability
- Data sovereignty
- Latency
- Migration

Fully equipped: Business resiliency

When a company thinks about running its mission-critical SAP workloads in the cloud, one of its top concerns will be business continuity. The level of business continuity determines whether the systems will remain up-and-running for the thousands of business users that rely on them every day.

Most organizations running on-premises infrastructures typically maintain two data centers. The primary data center hosts the primary and high-availability (HA) environment, and the secondary data center hosts the passive disaster recovery (DR) environment. Both HA and DR are usually passive. If the primary data center is hit by a disaster – such as an electricity outage, flooding or an earthquake – the systems failover to the secondary site. In many cases, the failover is manual, and it could be hours, days or weeks before the company can resume normal operations.

AWS goes much further to safeguard business resiliency.

AWS global infrastructure is built around Regions and Availability Zones (AZs). Each region is a separate geographical area and the regions are made up of isolated locations known as AZs. Each region is completely independent and all of the isolated AZs in that region are connected through low-latency, high throughput, and highly redundant networking. The following diagram[2] illustrates the relationship between regions and AZs.

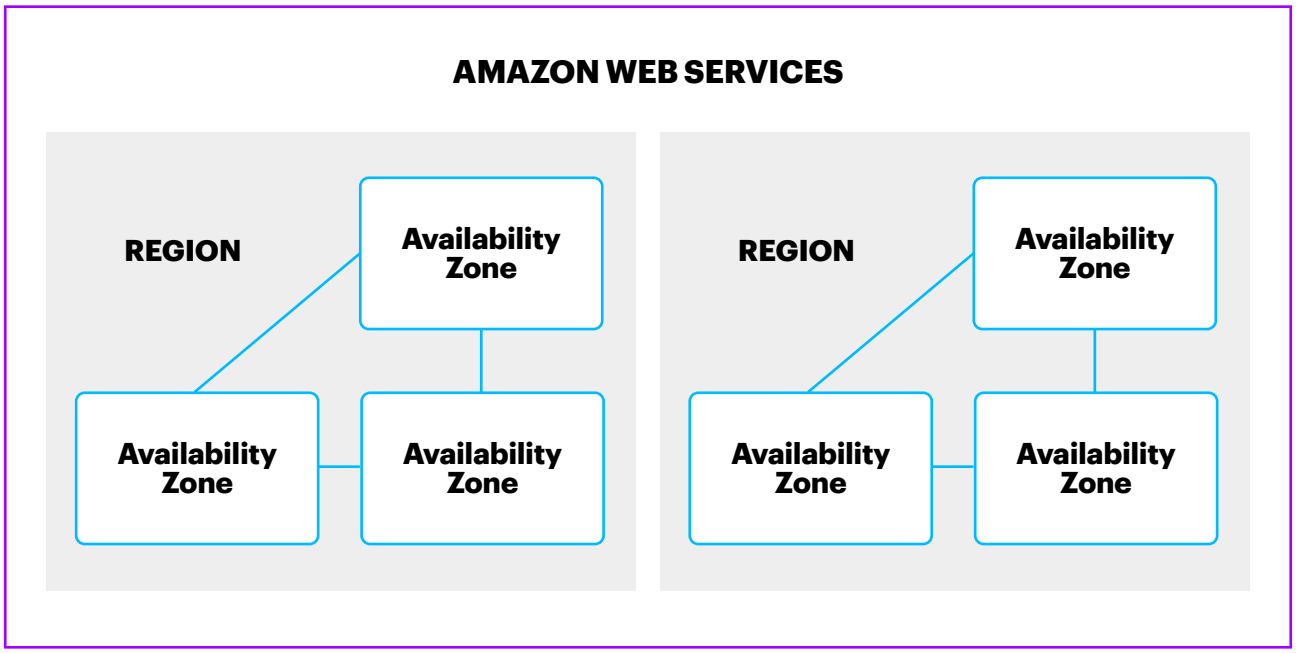

Figure 1. AWS global infrastructure

In addition, each AZ has its own discrete uninterruptable power supply (UPS) and onsite backup generator facilities. The power supplies are each fed via different grids from independent utilities to further reduce single points of failure (SPOFs). All AZs are redundantly connected to multiple tier-1 transit providers. The AWS Cloud spans 61 AZs within 20 geographic regions around the world[3].

This set-up allows customers to deploy SAP environments across multiple AZs improving resiliency. AWS also offers various options for DR. Customers can opt for cost-optimized DR, which provides a smaller DR environment.

In the event that the primary environment is no longer available, the DR environment can be rapidly resized to match the primary environment's resources. Some customers may have conservative recovery time objectives (the amount of downtime that can elapse without affecting the business) and recovery point objectives (the age of files that must be recovered from backup for normal operations to resume after an outage). For these organizations, AWS offers performance-optimized DR, in which the DR environment is the same size as the primary environment.

Peace of mind: Resilient SAP architecture

AWS's drive for business continuity isn't limited to enhanced DR – it also includes eliminating application-level single points of failure (SPOFs). For SAP environments on AWS, that means protecting your database, central services and creating a robust architecture by leveraging multiple availability zones to avoid SPOFs.

AWS provides various native services to further enhance the resiliency of the SAP architecture. For example, AWS customers can take advantage of AWS Elastic File System (EFS), which delivers a fully managed, secure, encrypted shared file system service that customers can use to mount between SAP application servers and databases on AWS. Because the EFS service is fully managed, this helps customers not have to worry about system outages.

AWS also offers numerous services and features to simplify management and operations of SAP solutions, including patching, management, backups of file systems, and taking snapshots of entire instances to simplify SAP system refresh processes.

These services provided by AWS make it easier for customers to manage complex SAP environments and help to reduce timelines and risks for SAP operations to enhance business continuity.

Today, AWS has more than 50 instances certified to run SAP solutions, including 18 instances certified to run SAP HANA[4]. Customers running their SAP landscapes on AWS can rest assured that their mission-critical systems are in good hands. Don't just take our word for it – ask customers running their SAP applications on AWS, such as Del Monte Foods.

Protecting the business: Security

Maintaining rigorous security is in everyone's interest, and in recognition of this, AWS provides various security services that customers can leverage to protect their data.

AWS's shared security model provides security and protection of data up to the operating-system level, including everything from guest operating system and hypervisor to the bottom of the stack, plus physical security of the data centers.

Accenture helps customers manage the security from the operating system all the way up into the SAP application and network.

Accenture assesses the organization's requirements, delivers recommendations for minimum security, looks at how best to meet those needs using AWS native and third-party services, and helps to ensure the customer is not exposed to known vulnerabilities or cyber threats. Together, Accenture and AWS deliver a comprehensive approach to security that goes beyond what is typically covered in infrastructure and SAP application security. For example, AWS offers SAP vulnerability management and SAP custom code scanning, as well as threat intelligence and forensics.

Eyes on the bottom line: Cost efficiency

Shifting from an on-premises environment onto cloud can help to significantly reduce infrastructure costs.

In fact, Accenture and AWS have found that many companies moving their SAP landscapes to AWS Cloud can cut TCO by between 20 and 40 percent. To understand this point, let's first look at the way companies purchase hardware for on-premises deployment – and all the guesswork involved.

Typically, companies buy infrastructure to last between three and five years, so whatever system they purchase needs to be large enough to accommodate forecasted future growth. What's more, they need to size for peaks in demand, then add contingency. Companies tend to play it safe and overestimate capacity requirements to reduce the risk of running out of space.

The result? They buy an infrastructure that is oversized – and they pay for all that capacity, whether or not they use it.

How can AWS help? Companies can pick and choose the systems that fit their current workloads. If they need to scale up and down, they can switch to a larger or smaller environment in a couple of minutes.

With AWS, customers can now build to the valleys instead of building for the peaks. This not only helps customers save costs, but also helps them become more responsive to changing business needs.

Making life easier: Shrinking the management overhead

Moving SAP applications to AWS helps save time for companies' internal IT teams. Although on-premises technologies have evolved, only a limited percentage of everyday management tasks can be automated.

This is not the case with AWS. Because AWS offers API-driven services, most of the infrastructure-driven operation can be automated. Companies using AWS can write their own scripts to handle regular operational tasks such as backups and refreshes for SAP environments. What's more, scripts can be set to perform the same activities across one environment or many simultaneously.

For customers running SAP applications, Accenture and AWS have gone even further and built CloudSuite for SAP – a series of DevOps tools that automate SAP deployments and operations on AWS. The suite comes with AWS infrastructure plus blueprints and best practices for SAP architecture deployments, and includes popular SAP products.

CloudSuite for SAP includes four solutions:

1. **CloudBuilder** for the deployment and testing of SAP workloads.
2. **CloudRunner**, which enables automated starts and stops for non-production environments. For example, customers can configure the development instance of SAP S/4HANA® to shut down if no developers log on for 30 minutes, as well as for scheduled up- and downtime. Production instances can auto-scale to adjust capacity on-the-fly.
3. **CloudAdmin**, which automates SAP Basis activities including scripting underlying infrastructure tasks, such as backups, restores, cloning, refreshes and applying operating system patches.
4. **CloudMonitor**, an SAP Solution Manager plug-in that provides end-to-end monitoring across the whole stack – including the SAP application. The tool is similarly integrated with Accenture myWizard® for SAP Operations.

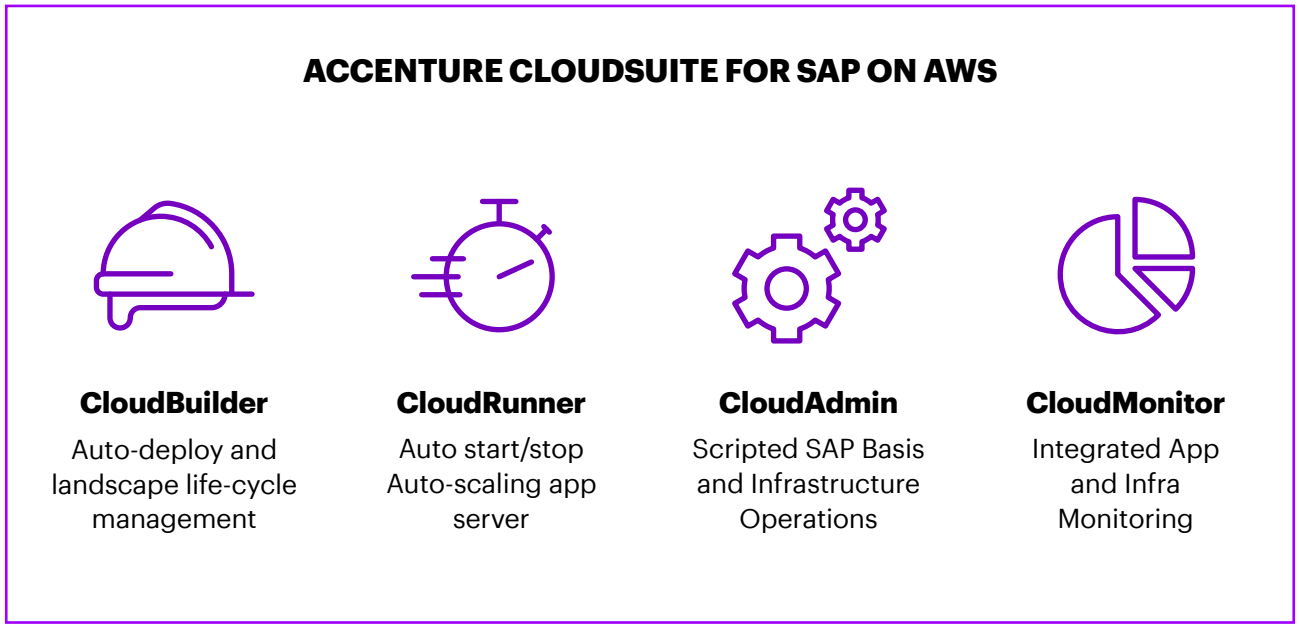

Figure 2. Accenture CloudSuite for SAP

The impact? Using a single self-service customer interface with automated build and run of SAP applications can reduce the cost of SAP projects by lowering the third-party deployment cost and decreasing the need for manual labor in operations.

Keeping your finger on the pulse of new developments: Easy access to cutting-edge technologies

The real value of migrating to cloud is not the "lift and shift" aspect. Moving to AWS makes it easier and faster to augment and enhance SAP environments with new technology innovation.

How? By leveraging native AWS services for blockchain, artificial intelligence, machine learning, IoT or predictive analytics and integrating them with your existing SAP environment or by deploying SAP Cloud Platform (SCP) on AWS. SCP is an open platform-as-a-service offering from SAP that provides database and business application services to digital enterprises. SAP Cloud Platform is available in seven AWS regions around the globe, and companies can manage it neatly alongside their primary SAP environments in AWS.

On top of that, switching to AWS enables companies to take advantage of infrastructure advancements in a way that on-premises environments usually can't rival.

When customers purchase on-premises hardware, their technology is essentially frozen in time, because they tend to use those systems for the next three to five years. It's rare for companies to replace infrastructure prematurely, because it requires such substantial investments.

By contrast, AWS constantly releases new instance types, services or features that customers can start using immediately. For example, AWS's latest instances have nitro technology[5], which provides better performance at lower cost. Either way, organizations can take advantage of a fast pace of innovation on AWS compared to traditional on-premises architectures.

Adapting to fit: Seamless scalability

Of course, any company thinking of moving mission-critical SAP solutions to the cloud will want to know that they can scale as they grow. AWS offers true peace of mind in this area.

AWS supports larger SAP installations than ever before, thanks to its recently announced Amazon EC2 High Memory Instances[6]. Whereas previously the virtual machines (VMs) for SAP HANA were limited to 2 TB or 4 TB for scale-up workloads, AWS now offers Amazon EC2 High Memory Instances, purpose-built for SAP HANA, that support memory sizes of 6, 9 or 12 TB on bare metal for scale-up deployments[7]. In addition, AWS recently announced support for scale-out clusters up to 48 TB for SAP S/4HANA-based online transactional (OLTP) SAP workloads[8], and it has supported scale-out up to 50 TB for SAP workloads based on online analytical processing (OLAP) since 2017.

This means AWS is now an attractive option for enterprises, which typically need very large SAP HANA deployments. For example, Japanese clothing business Fast Retailing (better known as UNIQLO) was one of the first customers to use Amazon EC2 High Memory Instances[9] to support its SAP Fashion Management solution as the business achieves substantial growth[10]. AWS has already announced plans to launch 18 TB and 24 TB scale-up instances later this year[11].

Finding the right balance: Minimizing latency while observing data sovereignty

Organizations put a great deal of careful consideration into where they host their data – and with good reason.

For starters, data-center location is important in helping companies adhere to rules around data sovereignty. For example, they may need to store certain data within particular national boundaries or within a broader territory such as the European Union.

In addition, although network speeds are close to the speed of light, latency issues can occur if network traffic needs to travel a long way. For example, if a user in Japan is accessing data or a system hosted in Europe, he or she may experience slight delays. If application response times become sluggish, user productivity starts to decline.

Setting up and maintaining data centers is expensive.

To reduce costs, most organizations using on-premises infrastructure or private clouds limit themselves to two data centers to run their regional and global systems. This approach makes it hard to keep latency and response times low for remote users. AWS's global Regions enable customers to host their SAP systems closest to their customer base, helping them minimize latency and meet requirements for data sovereignty. For example, customers can run global systems near large user bases, but there's nothing to stop them from running regional systems from data centers that are closer to the users. The result? Companies can reduce latency and accelerate application response times – fostering greater user productivity – while choosing where data resides so they comply with data sovereignty regulations.

Making the switch: Smooth migration

By this point, you can see how moving your SAP landscape to the cloud can help you cut costs, boost availability, increase security, save time, and more. How do you make the switch without disrupting the business users who depend on the systems?

Accenture AWS Business Group (AABG) is here to help. AABG brings together the best of AWS and Accenture to accelerate enterprise adoption of AWS and business value creation. What's more, it has a history of success in transforming and migrating large-scale enterprise application environments.

AABG offers a number of mechanisms to help companies transition smoothly to cloud, with different tools catering to different source systems:

Homogeneous SAP migrations (in which the operating system and database remain the same):

- Physical-to-virtual migrations: tools to help organizations shift from on-premises physical hardware to AWS.
- Virtual-to-virtual migrations: solutions to help companies migrate from virtualized on-premises infrastructures to AWS.
- Server migration service (SMS) that enables companies running VMware-based environments to replicate their environments directly into AWS.

Heterogeneous migration (in which the operating system or database changes):

- SAP heterogeneous system copy, potentially with options that minimize downtime, such as SAP nZDT or Shareplex.
- SAP Database Migration Option for migrations to SAP HANA and Sybase.

For example, Accenture recently helped Del Monte Foods migrate 200 servers – including 82 machines dedicated to SAP – to AWS with minimal impact on commercial operations. The end-to-end migration took 3.5 months, and business users didn't even notice the cutover for the production environment, which took place over a weekend.

The results? Del Monte Foods accelerated infrastructure provisioning from weeks to under 60 minutes, improved stability, cut costs and ramped up business agility[12].

Crucially too, by giving Del Monte Foods the opportunity to explore the latest cloud native capabilities on AWS, the migration has opened the door to new insights into performance and spending from advanced analytics, as well as providing a firm foundation for future innovation. This is where the true value of any migration to AWS is to be found.

Get in touch

We've seen that Accenture is well-positioned to help large enterprises run their SAP applications efficiently in the AWS Cloud – offering rock-solid reliability, high performance, robust security and more.

In fact, in most cases the offering from Accenture and AWS is more efficient and effective for companies than hosting applications internally, as Accenture and AWS's powerful economies of scale mean that investments are divided between thousands of customers.

Ready to get started?
Contact us and we'll be happy to help you start unlocking the benefits of cloud in your SAP landscape.

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About Accenture AWS Business Group (AABG)

Accenture AWS Business Group (AABG) brings together the best of AWS and Accenture to accelerate enterprise adoption of AWS and business value creation. It offers 360° engagements including strategy, design, delivery and operations, and has a proven history of success in transforming and migrating large-scale enterprise application environments. AABG has a global presence including more than 5,000 technologists trained in AWS and more than 50,000 SAP practitioners. It provides accelerators, tools and AWS native development skills to drive scale and speed while reducing cost and risk. Visit us at www.accenture.com/us-en/service-aws-cloud.

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