LEVERAGING THE CLOUD FOR SPEED, AGILITY, AND ROI

Supercharge SAP: Why Customers are Deploying SAP on AWS

Executive Summary

SAP® customers who have long envied the many operational and cost benefits promised by cloud computing can now confidently pursue "cloud-first" strategies. Companies that have made this move in collaboration with a leading company like Amazon Web Services (AWS) aren't looking back. No longer bound by the constraints and overhead of legacy infrastructure, they're pursuing new ways in which AWS-based SAP deployments can further their strategic goals and increase their competitiveness.

Growing numbers of organizations have already supercharged the performance, flexibility, and security of their SAP applications while simultaneously cutting their costs by moving their SAP instances to AWS. For many, the marriage of mission-critical SAP applications with the proven and multifaceted AWS Cloud has become a central element of their digital transformation initiatives.

Not only is AWS certified by SAP to run its software, the two companies have worked closely to optimize SAP's performance on the AWS Cloud. That optimization includes leveraging Intel® Xeon® E7-8880 v3 processors that deliver the processing speed and memory scalability required to fully exploit the power of the SAP HANA in-memory database.

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Introduction

Say the phrase "mission-critical software," and tens of thousands of business and IT executives will think immediately of one company: SAP. SAP, whose name became virtually synonymous with integrated enterprise resource planning (ERP) software in the 1990s, today remains a core fixture within data centers throughout the world. By SAP's own estimate, its customers include 87% of the *Forbes* Global 2000, and its systems touch 76% of the world's transaction revenue.

In today's digitally dependent world, mission-critical software has to deliver more than just extreme dependability and high availability. Customers are asking for solutions that are fast enough to meet the demands of real-time operations, flexible enough to adapt quickly to changing business and market requirements, and secure enough to protect valuable data.

Many SAP customers have struggled to address these and other requirements within their own data centers. Although on-premises SAP deployments may offer stable and predictable performance, they often run on rigid, inflexible, and costly infrastructure. As a result, companies can find it difficult to quickly and affordably scale and modify their SAP environments, to acquire and deploy cutting-edge hardware platforms, and to expand their presence in new geographic markets.

To meet these and other challenges–and as a central element of their digital

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transformation initiatives–growing numbers of SAP customers are migrating some or all of their SAP-based operations to the AWS Cloud. Much like SAP itself, pioneering cloud services provider AWS has an unmatched global presence and reputation in its sphere of operations. In a recent IDG Enterprise survey, for example, nearly 60% of the respondents identified AWS as a thought leader in cloud computing, well ahead of any other provider.

Through collaboration with the ERP leader, AWS has created a variety of SAP-certified and SAP-optimized environments on the AWS Cloud. Especially attractive to many customers is AWS's ability to deliver on the full potential of SAP HANA–the groundbreaking in-memory data platform that consolidates your data needs, removing the burden of managing disparate systems and siloed data. AWS has recently introduced cloud instances, built on the latest Intel® Xeon® Processors, which have the ability to deliver striking SAP HANA performance and scalability.

The Mission-Critical Cloud

A top impetus for moving to the cloud has always been to reduce the capital and operational expenses of running data centers on-premises. By no means are cloud benefits limited to reduced total cost of ownership (TCO), however. While cutting TCO ranked as the top objective, it was just one of nearly 20 cloud goals cited by respondents to the IDG Enterprise cloud survey, as shown in Figure 1.

Achieving these cloud benefits when running mission-critical enterprise applications requires mature, sophisticated, and proven cloud environments that can meet the most demanding performance, availability, security, and efficiency demands. AWS's ability to meet these requirements is reflected in the fact that SAP itself uses AWS to host many of the cloud-based services it offers.

A growing community of SAP customers are finding that AWS can help them realize the promise of the cloud's diverse benefits. By moving SAP instances to AWS:

- **The Kellogg Company**, a leading provider of cereal and food products, estimates it will save nearly $1 million in software, hardware, and maintenance costs over the next five years by using AWS in its test and development environments.

Pushing SAP HANA Performance with Amazon EC2 X1 and Intel® Xeon®

Since SAP introduced its in-memory database, SAP HANA, customers have significantly accelerated everything from their core business operations to big data analytics. But capitalizing on SAP HANA's full potential requires computational power and memory capacity beyond the capabilities of many existing data center platforms.

To ensure that deployments in the AWS Cloud could meet the most stringent SAP HANA demands, AWS collaborated with SAP and Intel to create the Amazon EC2 X1 Instance. With four Intel® Xeon® E7 8880 v3 processors (which can power 128 virtual CPUs), X1 offers more memory than any other SAP-certified cloud instance available today.

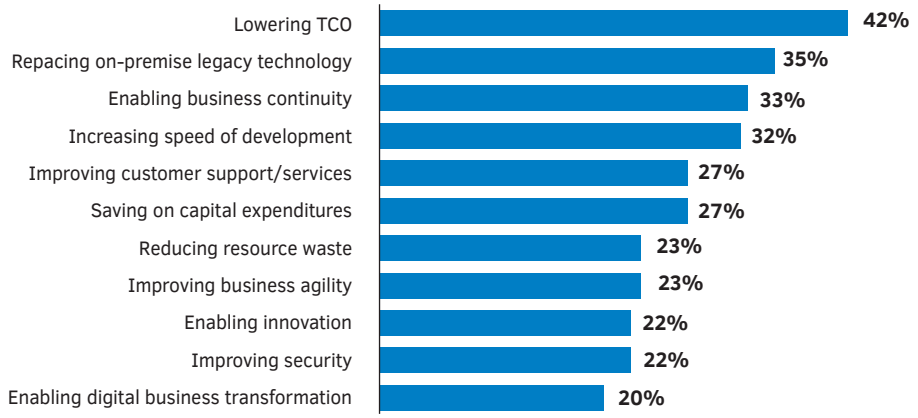
***X1 instances offer 2TB of DDR4-based memory**, and AWS recently introduced a new instance—called X1e—which supports up to 4TB of RAM. X1 instances also provide 10 Gbps of dedicated bandwidth to Amazon Elastic Block Store (Amazon EBS) and are EBS-optimized by default at no additional cost.*

***X1 instances are certified for scalable deployments** of as many as 17 different nodes and can scale out to 34TB of RAM for any OLAP-based situation SAP HANA supports.*

***X1 instances enable increased cryptographic performance** via the latest Intel® AES-NI feature, which is a new encryption instruction set that improves on the Advanced Encryption Standard (AES) algorithm and accelerates the encryption of data in the Intel® Xeon® processor family and the Intel® Core™ processor family.*

AWS supports hybrid cloud solutions that blend legacy on-premises environments with advanced cloud instances, helping companies move to the cloud model in stages.

Figure 1. Top Drivers Behind Cloud Computing Initiatives



SOURCE: 2016 IDG ENTERPRISE CLOUD COMPUTING SURVEY

- **Global energy company BP** was able to decommission 11 application and data servers that had been supporting its Castrol lubricants business, and has sped average response times by 40%.
- **Fashion retailer Brooks Brothers** now sets up new test environment instances in hours, rather than the weeks it used to take.
- **Coca-Cola İçecek**, a major distributor of sparkling and still beverages, has seen its disaster response times improve dramatically, with the time required for one recovery process dropping from 1 day to 15 minutes.

Rationalizing Legacy Infrastructure and Migrating to AWS

The types of advantages these and other companies are realizing by moving to AWS are helping some to adopt "cloud-first" strategies. Even some of the most committed of cloud proponents, however, aren't always able to simply abandon their existing infrastructure investments. They often need to keep exploiting those sunk costs for some time, even as they begin to move IT operations to the cloud as part of their digital transformation efforts.

For many companies, moving to the cloud provides them the opportunity to move off of outdated and inefficient hardware, and to right-size applications and infrastructure that have become bloated. But when mission-critical migrations do occur, companies need to execute them as quickly and non-disruptively as possible.

Fortunately, AWS provides a range of services and capabilities for simplifying cloud migrations. AWS also supports hybrid cloud solutions that blend legacy on-premises environments with advanced cloud instances, helping companies move to the cloud model in stages. Among the AWS migration aids are a collection of Quick Start reference deployment guides, including one for rapidly performing SAP HANA migrations.

Online shoe and clothing retailer Zappos.com used the AWS Quick Start reference guide to move from a legacy database environment to SAP HANA over the course of a weekend. The goal of the Quick Start program was to achieve the migration within 48 hours, but the Zappos.com deployment took only 29 hours.

Another core AWS feature–important for cloud migrations as well as ongoing operations–is its worldwide footprint. The AWS Global Infrastructure operates 44 Availability Zones (AZs) spread across 16 regions. This global presence allows companies to establish cloud operations in

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whatever locations meet their performance, data residency, and sovereignty requirements, and gives them easy options for dispersing operations as part of their disaster recovery strategies.

Coca-Cola İçecek (CCI) had been running a suite of SAP applications (financial reporting, supply chain management, HR, etc.) on a data center in Istanbul, near its corporate headquarters. The legacy infrastructure was hitting its capacity limits, which was compromising application performance.

Working with Lemongrass Consulting, an AWS Partner Network (APN) Advanced Consulting Partner, CCI moved its entire SAP environment to multiple Availability Zones within the EU (Frankfurt) region. The entire migration process, from initial concept to full deployment, took just three months. "We had virtually zero issues during or after the migration," says Levent Yildirmak, technology services manager for cloud systems at CCI.

Based on these results, CCI recently migrated its on-premises SAP Business Warehouse (BW) system to SAP HANA on AWS, where it seamlessly integrates with the company's SAP ECC system that was already running on AWS. "Today, critical business reports are running faster after migration to AWS and SAP HANA. Some reports, such as daily sales reports, are running almost 10 times faster—in a few minutes versus 30 minutes in our previous on-premises environment—even though our hosting costs reduced dramatically" continues Yildirmak.

Many Benefits Seen by Moving SAP Environments to AWS

Customers report choosing AWS because it has the most complete cloud environment for business innovation and is delivering a variety of benefits to their SAP application and SAP HANA workloads. The AWS Cloud meets their critical needs for performance, rapid provisioning and scalability, and security.

Performance Benefits

AWS has developed a variety of Amazon Elastic Compute Cloud (Amazon EC2) instances optimized for specific workload needs. One of the most powerful EC2 instances is X1, which has been purpose-built with Intel® Xeon® E7 processors that are optimized to meet the strict performance requirements for in-memory databases such as SAP HANA and other big data and enterprise workloads. (For details on X1 see Pushing SAP HANA Performance with Amazon EC2 X1 and Intel® Xeon®).

SAP has certified X1 instances to run Business Warehouse on HANA (BW/4HANA), data mart solutions on HANA, Business Suite on HANA, and the next-generation Business Suite S/4HANA in production environments on the AWS Cloud.

Aerospace and defense company Lockheed Martin moved its on-premises test and development instances of SAP HANA on X1 instances. During testing, the X1 instances "performed much better than our on-premises test environments and our in-house application servers," says Brent Eckhout, SAP technical services manager for Lockheed Martin. He expects to see even more improvements going forward.

Provisioning and Scalability Benefits

By leveraging AWS, companies can avoid time-consuming and complex infrastructure purchases and deployments. Once running their software in AWS instances, they can rapidly scale up and scale down compute, storage, and networking infrastructure to match fluctuating loads and service level requirements, or in response to other factors.

Because AWS has a wide variety of compute and storage services certified for SAP applications and SAP HANA workloads, companies can move their operations to AWS with confidence–while using their existing SAP licenses. Additionally, as AWS is certified by SAP, customers can get the same service and support from SAP for their

cloud-based operations as they do for their on-premises deployments.

When the multiplatform publishing company Fairfax Media decided to deploy SAP BW/4HANA, it leveraged AWS to rapidly test its proof of concept and then to go live with its production system within three months. After six months, when the production system reached its capacity, Fairfax Media was able to upgrade from a 244GB system to a 2TB system within one hour.

Security Benefits

Not long ago, the phrase "cloud security benefits" would have seemed like an oxymoron to some. Increasingly, however, companies have come to realize that mature cloud environments such as AWS can match or surpass the security capabilities of their on-site data centers.

AWS has a large portfolio of redundant and layered security controls, and its engineers and automated systems continuously monitor, validate, and test the environment's defenses. Furthermore, the AWS Partner Network (APN) includes companies that offer a wide range of security services built to complement and extend the protections present in the core AWS environment.

As with most retailers, Brooks Brothers understands that it's imperative to keep its customers' data confidential. Among other tools, the company uses AWS Direct Connect to secure its data communications, and AWS Identity and Access Management (IAM) to limit data access to only authorized users.

"All of our customer data is sitting on the AWS Cloud, which shows how confident we are in the security we get from AWS," says Philip Miller, director of infrastructure and technical engineering at Brooks Brothers.

Meanwhile, AWS customer Lockheed Martin is taking advantage of another security layer for running its two SAP HANA instances: AWS GovCloud (US), an isolated AWS Region. "As an aerospace and defense firm, security is absolutely essential," says Jeff Wright, cloud services senior manager at the company. "That's why we chose AWS GovCloud (US)."

Business Transformation by Blending SAP and AWS

The business benefits of running SAP applications and SAP HANA on the AWS Cloud go well beyond those discussed above. One fundamental benefit is that of not having to constantly reinvent–and maintain–the wheel. By relying on AWS to manage, patch, secure, and upgrade the IT infrastructure, companies can refocus their time and resources on more strategic needs. They can concentrate on being experts in their own business domains, rather than on being IT deployment and maintenance experts.

The support provided by AWS starts right at the deployment stage. Deploying SAP HANA production environments through AWS Quick Start streamlines this process and ensures accordance with best practices from both SAP and AWS. Integrating those SAP workloads with other AWS services, such as AWS CloudFormation and Amazon CloudWatch, can further simplify management by automating resource provisioning and other system maintenance.

In addition, customers gain easy access to the flow of innovations constantly being developed, tested, and deployed by AWS. Most notably for SAP HANA customers, those innovations include the X1 and X1e memory-intensive instances built on Intel® Xeon® E7-8880 v3 processors. The technological collaboration between SAP and AWS, for software optimization, AWS and Intel on next generation processing is designed to provide the modern enterprise with a seamless path to further its journey to the cloud.

For more information on SAP on AWS, please visit:

SAP on AWS:
aws.amazon.com/sap

SAP HANA on AWS:
aws.amazon.com/sap/solutions/saphana

AWS Quick Starts:
aws.amazon.com/quickstart

For more information on the Intel®Xeon® processor, please visit:

www.intel.com/content/www/us/en/products/processors/xeon/e7-processors/e7-8880-v3.html

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