

**Enabling Enterprise Scalability
with Accelerated SAP Private
Cloud ERP Transformation**

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Executive Summary

In today's accelerated digital economy, C-suite leaders face relentless pressure to drive innovation, respond swiftly to shifting market demands, and achieve sustained revenue growth. Meeting these expectations demands a modern, cloud-native IT foundation one that is elastically scalable, consistently high-performing, and able to deliver an outstanding user experience worldwide.

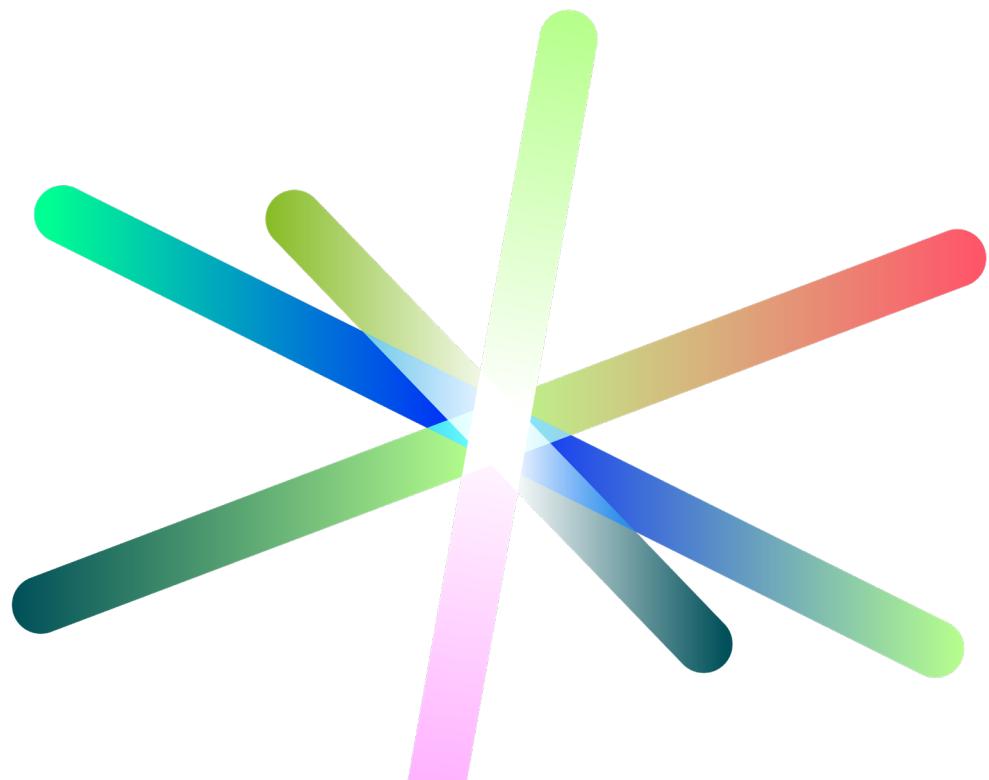
With the 2027 deadline fast approaching, organizations running SAP ECC must plan their migration to SAP S/4HANA - SAP Cloud ERP Private before mainstream support expires. This inflection point compels business and technology leaders to critically assess their SAP transformation journeys - choosing between Greenfield, Brownfield, or Bluefield migration pathways to achieve modernization. Yet, the route to S/4HANA is far from straightforward. It requires not just selecting the right conversion approach, but also realigning infrastructure strategies with long-term business goals, technical realities, and organizational readiness.

Migration to SAP Cloud ERP has become essential for companies aiming to unlock agility, resilience, and innovation-capabilities that are increasingly out of reach with traditional on-premise infrastructure. Cloud adoption brings advantages like on-demand scalability, accelerated innovation, and improved operational efficiency. However, many organizations find that traditional, multi-phase transformation programs introduce fragmentation, extended timelines, and significant complexity, which can slow value realization and increase risk.

As organizations look to scale and adapt, another critical challenge emerges: traditional SAP HANA "scale-up" architectures, which depend on a single high-capacity server, often create performance & scalability bottlenecks as data and transactional demands grow. To overcome these limitations and future-proof their SAP environments, enterprises are shifting to a scale-out SAP HANA architecture, which enables distributed processing and enhanced performance.

This white paper introduces a unified migration approach that enables organizations to convert SAP ECC to SAP S/4HANA while simultaneously migrating to a scale-out SAP HANA architecture on a Cloud Service Provider platform such as AWS. In this Whitepaper, we detail how leveraging the SAP DMOVE2S4 (Database Migration Option) approach on AWS enables enterprises to orchestrate a coordinated, "single-move" transformation-achieving S/4HANA conversion, cloud migration, and scale-out architecture adoption simultaneously. This strategy is applicable for organization migrating to SAP Cloud ERP, Private (aka RISE with SAP, or SAP S/4HANA on cloud (natively) for customers who like to migrate to cloud first and then to SAP Cloud ERP, private later.

The following sections provide actionable insights into how this strategy can accelerate value realization, reduce operational risk, and enable sustainable innovation. Ultimately, this unified approach empowers CxOs to comply with the 2027 deadline while ensuring their SAP landscape is resilient, agile, and poised for future growth.



Business Context and Value Drivers

Building on the urgency highlighted in the executive summary, global enterprises are entering the decisive period. The convergence of rapid technological change, rising customer expectations, and intensifying competitive dynamics are converging to redefine how organizations create value, scale operation, and ensure resilience.

For SAP-centric organizations, this reality is particularly urgent. With mainstream SAP ECC support ending in 2027, the decision is no longer whether to modernize but how to execute transformation with speed, control and measurable returns. Maintaining legacy ERP systems not only raises operating costs and hinders scalability; it puts future growth, agility, and competitive relevance at risk.

This transition goes beyond technical compliance. For Gsuite executives, it is a strategic inflection point. The SAP S/4HANA journey especially when paired with the flexibility & innovation potential of AWS cloud offers an opportunity to reinvent operations: shifting from yesterday's rigid, reactive ERP to a digital core that fuels speed, intelligence, resilience and optimized TCO.

Staying on SAP ECC is no longer tenable. It limits business flexibility, increases risk, and creates a widening gap with digitally native competitors. The costs of inaction are rising, making proactive, holistic transformation a top executive priority.

Key Market Forces Shaping SAP Transformation

Several global business dynamics are now converging, demanding decisive action:

Simplification for Innovation



Streamlining processes and standardizing data models eliminate technical debt, speed up governance, and provide the agility required to accelerate innovation.

Cloud as Digital Backbone



Adopting cloud-first strategies enables on-demand scalability, integrated innovation, and lower total cost, allowing continuous and sustainable business evolution.

Scalability at the Core



Modern architectures flex and scale effortlessly, ensuring consistent performance and reliability even as data volumes and business complexity grow worldwide.

Operational Resilience



Robust, high-availability systems and disaster recovery capabilities guarantee business continuity and protect against disruption in today's always-on global marketplace.

Speed and Agility



A simplified, scalable platform empowers the enterprise to launch capabilities quickly, adapt to market changes in real time, and expand into new geographies without operational bottlenecks.

Data-Driven Leadership



Unified, real-time data provides executives with the insights necessary for informed, confident, and faster decision-making at every level.

Intelligent Enterprise and Differentiation



Embedding AI and automation across the business drives greater accuracy, efficiency, and proactive insight unlocking new opportunities and distinguishing market leaders.

The SAP Cloud ERP Transformation Mandate

CxOs must now guide their organizations through complex, high-stakes decisions:

- How to harness cloud and next-gen architectures to support growth and innovation
- How to coordinate SAP S/4HANA conversion, cloud migration, and scaling into a seamless transformation, minimizing business disruption and risk
- How to build a foundation that not only solves today's challenges, but positions the company for sustained competitive advantage

The Unified Solution: Why One-step Unified SAP Transformation

While the need for transformation is undeniable, many organizations struggle with fragmented, multi-phase SAP programs that introduce delay, complexity, cost, and incremental risk. Separating core upgrade such as SAP S/4HANA conversion, cloud migration, and enabling scale-out architectures often results in redundant efforts, longer timelines, and missed opportunities for value creation.

This transformation approach uses DMOVE2S4 (Database Migration Option Move to SAP S/4HANA) & provides a unified pathway that

brings together SAP S/4HANA conversion, migration to Cloud Service Provider platforms (like AWS), and the adoption of scale-out HANA architectures all within a single, orchestrated program. By embracing this approach, organizations can:

- Consolidate transformation efforts: Achieve SAP S/4HANA adoption, scale-out readiness, and cloud migration in one coordinated move.
- Accelerate value realization: Reduce downtime, avoid unnecessary duplication of testing and change management activities, and expedite the path to innovation.
- Lower cost and risk: Streamline governance, create clarity and accountability, and address security and compliance objectives from the outset.
- Empower business and IT: Enable closer alignment across business and technology to ensure the end-state SAP landscape delivers true competitive advantage.

The following sections detail this unified approach illustrating how leveraging this Unified SAP Transformation approach backed by Deloitte and AWS's experience, enables CxOs to meet the SAP 2027 deadline while simultaneously transforming their SAP landscape for durability, agility, and growth.

This is where One-step Unified SAP Transformation (UST) delivers a distinctive value.



Solution Overview

Modernizing SAP: Traditional vs. Unified Approaches

Transitioning from SAP ECC on-premises to SAP S/4HANA whether under RISE with SAP or a custom program presents multiple technical pathways, each with distinct advantages and trade-offs. Traditional methods typically involve multiple sequential steps and technical downtimes, for example:

- **Lift-and-Shift ECC — Convert — Add Scale-Out:** Move SAP ECC to the cloud, convert to SAP S/4HANA in-cloud, then add scale-out requires multiple phases and infra changes.
- **Convert On-Prem — Cloud Move — Scale-Out:** Convert SAP ECC to SAP S/4HANA on-prem, migrate to cloud, and redesign scale-out, resulting in two major transitions.
- **Replatform ECC — Convert in Cloud — Scale-Out:** Replatform SAP ECC to new infra or cloud, convert to SAP S/4HANA in-cloud, then implement scale-out entails a longer journey with more testing.

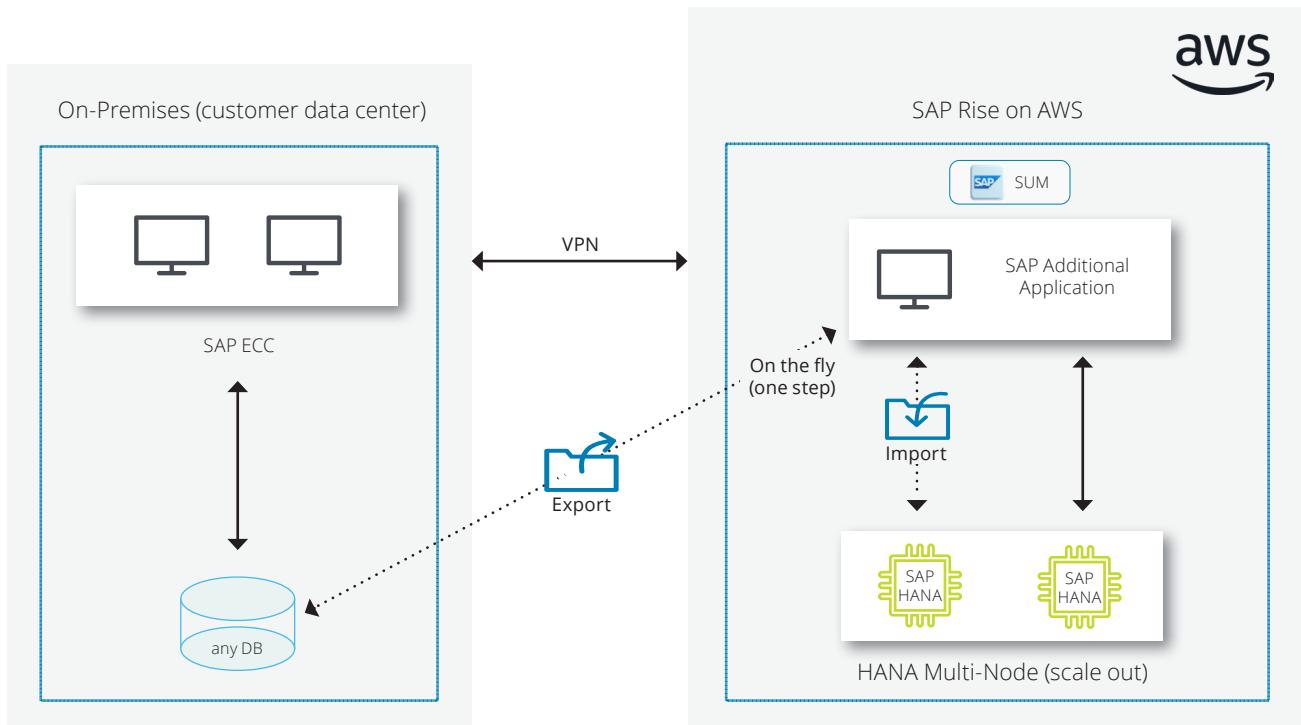
While feasible, these approaches often require at least two periods of downtime disrupting business and increasing cost and complexity. Adding scalability such as moving from SAP HANA scale-up to scale-out architectures can further complicate the journey if not addressed early, resulting in additional migration phases and risk of further interruption.

A Streamlined Path: One-Step Unified SAP Transformation

Deloitte and AWS, leveraging SAP's DMOVE2S4 (Database Migration Option), have completed the successful proof of concept (POC) demonstrating Unified SAP Transformation approach to convert SAP ECC directly to SAP S/4HANA and modern scale-out SAP HANA architecture on AWS. This method accelerates transformation and drastically reduces business downtime by combining core technical steps into a single program.

In a recent proof of concept (POC), this unified approach demonstrated:

- **Direct brownfield conversion:** SAP ECC was converted straight to SAP S/4HANA in an AWS scale-out architecture, avoiding duplication of efforts and manual rework.
- **End-to-end efficiency:** Migration and conversion are performed together, reducing total cutover windows and operational risk.
- **Assured performance & integrity:** Core processes, integrations, and data quality were validated; system performance and compliance standards were maintained post-migration.



Comparing Traditional vs. DMOVE2S4 Approaches

A side-by-side summary illustrates the main distinctions:

Area	Traditional Approach	Unified SAP Transformation Approach
Technical Architecture	Manual pre-provisioning of S/4HANA components and single-node HANA; scale-out requires later rework.	HANA scale-out and AAS provisioned upfront; used during migration; ASCS split/move automated.
System Move	SUM (Software Update Manager) runs twice (export/import); manual data transfer.	SUM runs once on target AAS, connects to source remotely; live data streaming via R3load pipe mode.
Scalability	Post-migration partitioning, scale-out, and memory optimizations.	Table grouping, sizing, and distribution performed inline during migration.
Network Validation	Often left to cutover window; issues can delay go-live.	Throughput and latency validated pre-migration (>400 Mbps, <20 ms).
Operational Continuity	Post-migration stabilization may be longer due to multiple system changes.	Fewer handoffs and shorter hypercare due to integrated migration/conversion.

Key Implementation Considerations

To maximize the value of your transformation, consider these critical factors, which Deloitte addresses as part of its end-to-end approach:

System Assessment

Conduct in-depth landscape and dependency analysis, custom code review, and accurate sizing to select optimal AWS infrastructure. Deloitte offers accelerators like Ascend™, DMAP™, DCuT, and DPA to assess readiness, streamline migration, enable governance, and automate testing.

Data Management

Clean up obsolete data before migration, activate performance monitoring (such as SQLM), and rigorously test custom scripts. Strategize data distribution across HANA nodes to optimize for scale-out performance.

Performance Optimization

Tune HANA scale-out configurations partitioning, distribution, memory usage and run comprehensive load tests to ensure parallel processing efficiency.

Risk & Change Management

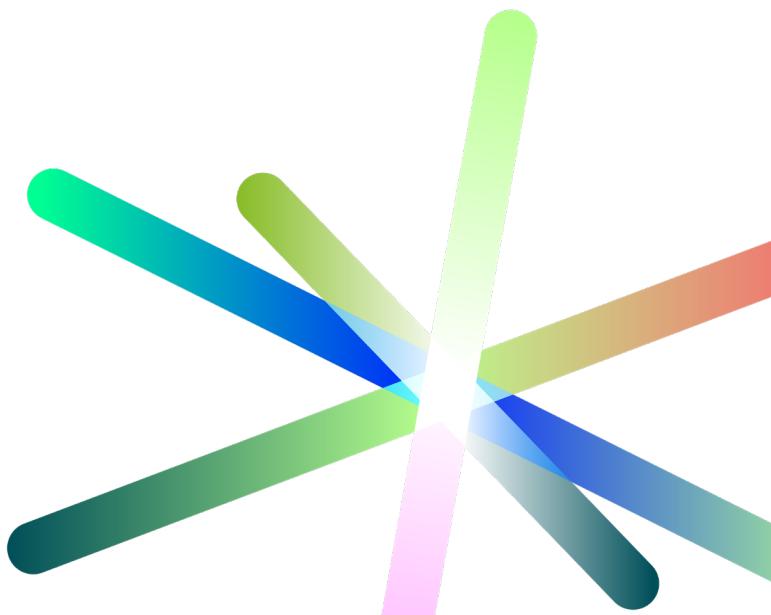
Address compliance, security, and develop robust rollback plans. Provide targeted training and clear communication to minimize business impact.

Support and Maintenance

Test comprehensively pre-go-live. Establish a post-migration hypercare period with dedicated support. For RISE with SAP on AWS, AWS and SAP offer joint migration support. Deloitte Operate leverages tools like DMAP™ and automation bots for proactive monitoring and continuous optimization of your cloud SAP environment.

Ongoing Optimization in Scale-Out Environments

In SAP HANA scale-out landscapes, regular table placement, partitioning, and distribution reviews are essential to ensure balanced performance across all nodes. Ongoing workload validation and tuning will help maintain long-term scalability and system efficiency.



Solution Approach

Implementation Approach

Our 3 in 1 (i.e. migration, conversion and SAP HANA scale-out deployment in one single step) implementation approach delivers a comprehensive SAP system modernization by migrating to AWS cloud while simultaneously upgrading to S/4HANA, combining infrastructure transformation with application enhancement in a single project. The structured approach can minimize business

disruption through careful planning, phased execution, and extensive validation, helping smooth transition from SAP ECC to modern cloud-based SAP S/4HANA application. The methodology leverages core AWS services and SAP-certified technologies to deliver improved performance, scalability, and operational efficiency while maintaining system integrity throughout the transformation process.

Readiness Planning		Migration		Testing		Cutover & Go-Live / Post Go-Live	
Migration Assessment and Setup	Pre-Migration Activities	System Migration	Post-Migration Activities	Testing and Validation	Cutover	Hypercare/Transition	
Review Current ECC architecture, OS/ DB landscape and Custom objects	Build AWS landing zone (EC2,FSx, EBS) with SAP certified machine types and validate secure connectivity with customer data center	Start SUM in DMO with System Move mode on AWS-based app server	Post-migration integration/ checks on target Application	Conduct load and performance testing across scale-out nodes	Perform cutover	Initiate support transition	
Review boundary systems and integration details	Install one SAP Application Server on AWS to host ASCS instance and execute SUM	(*) In SUM configuration phase disable "Automatic Table Redistribution"	Configure and enable HA/DR	Conduct Integration testing	Set up alerts and notification on new platform	Hypercare exit	
Define target S/4HANA architecture with Scale-out & AWS landing zone	(*) Install distributed HANA scale-out or up database and configure initial sizing on AWS	(*) Set breakpoint in SUM during uptime migration to pause execution and perform table grouping & table placement rules	(*) Confirm table distribution and memory/CPU load balance across HANA nodes	(*) Confirm table placement balance, CPU/memory distribution, and query	Functional and business validation	Decommission source SAP systems	
Finalize HA/DR approach, downtime and infra sizing	Ensure the ASCS instance is already split, and system is Unicode compliant	Monitor SUM logs for any inconsistencies and ensure sufficient temporary space and system resources throughout	Install additional SAP Application servers using AWS Launch Wizard	Conduct UAT	Perform post cutover technical checks	Optimize & Monitor performance, use query pinning (*) and dynamic tuning as needed	
(*) Discover Top largest 50 tables, expensive sql statements and enable SQLM	(*) Review system usage to group large or high-usage tables and prepare table grouping & placement strategy	Ensure network latency between source and AWS target stays below 20 ms, with minimum 400 Mbps bandwidth during the move	(*) Activate Optimistic Synchronous Table Replication (OSTR) between HANA nodes				

(*) Applicable for SAP S/4HANA Database Scale-out environment (table grouping, distribution, OSTR and performance validation are mandatory considerations).

Lessons Learnt from SAP S/4HANA Scale-out Migrations

Bringing SAP S/4HANA to a scale-out cloud architecture unlocks new business potential but comes with distinct challenges and learning curves. Drawing on Deloitte and AWS's enterprise experience with traditional project deployments, as well as our Unified SAP Transformation (UST) proof-of-concept (POC), here are key takeaways to inform and de-risk future SAP transformations.

For C-suite Executives: Business Leadership Insights

Modernization as a Growth Enabler

Treat SAP S/4HANA transformation as a lever for business value accelerating innovation, efficiency, and differentiation. Unified, one-step approach (as proven in POC) offers compelling advantages in reducing disruption and time to value.

Understand the Demands of Scale-Out

Both the POC and traditional projects show that scale-out architectures require early planning and new governance models to ensure long-term agility and cost-effectiveness.

Champion Change Readiness

Strong executive sponsorship is crucial to equip teams for new cloud operating models, tighter integration, and digital ways of working.

Drive Cost Efficiency through Operational Streamlining

A unified transformation approach shortens maintenance windows and testing cycles, streamlines oversight, and reduces overall migration costs. This enables organizations to reallocate resources to innovation and other strategic initiatives.

Be Proactive with Compatibility and Support

Keep close tabs on SAP's Product Availability Matrix and promptly upgrade applications and databases to supported versions to mitigate compliance or operational risks.

For Technical Architects: Engineering Know-How

Based on multiple enterprise-scale projects and POC findings:

Architect with Scale-Out in Mind

Establish correct table grouping using SAP Note 2408419; ensure that collocated tables remain on a single node to avoid query slowdowns.

Prioritize Cloud Connectivity Early

Provision dedicated AWS connections with sufficient bandwidth ahead of migration to eliminate bottlenecks.

Performance Readiness

Prepare the system to handle high data volumes efficiently during migration by ensuring key parameters, workload handling, and data movement routines are aligned for peak performance.

Keep Your SQL Cache Fresh

Clear SQL plan cache after migrations or DDL changes to maintain fast and accurate query execution.

Balance Resources Post-Cutover

Post-migration, review CPU and memory allocation across coordinator and worker nodes, using SQLM and system monitoring data, to optimize workloads and prevent hotspots.

For IT Leaders: Operational Playbook

From both POC and traditional field implementations:

Plan and Communicate Downtime Realistically

Set stakeholder expectations and anticipate possible delays, especially with table rebalancing during cutover build in an operational buffer where possible.

Early Insight into Workload Patterns

Enable SQLM during initial assessment to proactively identify costly queries and guide table placement.

Smart Data Preparation

Analyze the top 50 largest tables and most expensive SQL statements in advance to inform grouping and sizing; this accelerates scaling and performance optimization.

Safeguard Data and Plans

Create robust backups of SQL plan cache, thread samples, and backup catalogs pre-cutover for peace of mind.

Monitor Replication and Storage

Validate system replication health, augment /hana/data and /hana/log capacity temporarily during migration and reclaim excess storage once the migration is stable.

Key Takeaway

True SAP S/4HANA scale-out success requires not just technical execution, but coordinated business, IT, and architecture alignment. Combining our field-tested lessons from traditional projects with the streamlined promise demonstrated in the Unified SAP Transformation POC positions organizations to minimize risk, drive faster value, and lay the groundwork for continuous digital growth.

Why AWS + Deloitte

Organizations preparing for SAP's 2027 end-of-support deadline need a trusted path to modernization, and Deloitte in collaboration with AWS delivers precisely that. Deloitte brings more than 30 years of SAP experience and a global network of 23,000 SAP professionals, combining deep industry specialization with proven methodologies. Recognized by both IDC MarketScape and the Gartner Magic Quadrant as a leader in cloud transformation, Deloitte offers unmatched consulting expertise, proprietary accelerators, and automation tools that minimize disruption while driving enterprise finance transformation. With leaders across industries such as Consumer Goods, Financial Services, Life Sciences, and Government, Deloitte enables clients to reduce technical debt, increase agility, and accelerate their move toward S/4HANA and cloud-powered innovation.

On the infrastructure side, AWS provides the secure, scalable foundation needed for demanding SAP workloads. For the 15th consecutive year, AWS has been recognized as a leader in the Gartner Magic Quadrant for Cloud Infrastructure, acknowledging its unmatched reliability, performance, and innovation. Additionally, AWS continues to lead the ISG Provider Lens Quadrant Report

for SAP HANA Infrastructure Services for six consecutive years, underscoring its commitment to mission-critical enterprise solutions. From near-zero data loss disaster recovery capabilities to cutting-edge AI/ML integrations, AWS offers global reach, robust security, and flexible EC2 instance families purpose-built for SAP. Its track record makes it the top choice for organizations that need to scale, transform, and secure their SAP estates.

Together, Deloitte and AWS bring a globally recognized alliance that combines Deloitte's AWS Premier Tier Services Partner designation, Managed Service Provider credentials, and industry-specific competencies with AWS's leadership in cloud infrastructure. This partnership provides a simplified, cost-effective, and accelerated pathway to SAP modernization, leveraging distributed HANA scale-out, proven cloud automation, and enterprise-grade security. For organizations looking to reimagine their SAP environments, Deloitte and AWS jointly deliver the industry-leading combination of transformation expertise and cloud infrastructure excellence, helping enterprises unlock new levels of growth, resilience, and innovation in the digital era.

MODERNIZING SAP ENVIRONMENTS

Deloitte.

**S/4HANA
CONVERSION**

**UNIFIED
MIGRATION
APPROACH
HANA
SCALE-OUT**

**CLOUD
TRANSFORMATION**

- **ENTERPRISE-SCALE SOLUTION**
- **ACCELERATED CLOUD**
- **BUILT-IN RESILIENCE AND SECURITY**



Conclusion

For customers with large SAP databases seeking transformation, the One-Step Unified SAP Transformation approach offers significant strategic advantages by simultaneously reducing costs and complexity, while enhancing flexibility and scalability. This method overcomes the limitations of traditional “scale-up” architectures, which constrain database growth and tie operations to fixed SAP HANA instance sizes. As a result, it provides a more detailed and future-proof solution for enterprise systems. By streamlining traditional multi-phase processes, this unified approach accelerates SAP S/4HANA migration and better aligns IT modernization with business objectives. Leveraging AWS’s scalable cloud infrastructure and proven methodologies—combined with Deloitte’s deep SAP implementation experience and industry experience—organizations can reduce migration timelines and complexity, while ensuring future-ready performance.

Key outcomes

- **Integrated Transformation:** The methodology enables a smooth migration to SAP S/4HANA, aligning IT modernization with organizational goals and reducing the risks associated with traditional, multi-phase projects.
- **Scalable and Future-Ready:** Deploying a scale-out SAP HANA architecture on AWS enables the environment to grow business needs, delivering high performance and flexibility.
- **Innovation and Agility:** Leveraging AWS’s advanced cloud capabilities, including AI and ML, can help empower organizations to drive innovation, gain real-time insights, and make data-driven decisions, fostering a competitive edge.
- **Robust Security and Compliance:** The integration of AWS’s security features facilitates data protection and compliance, enhancing operational resilience and safeguarding business continuity.



If you are looking for a comprehensive and accelerated approach for transforming your SAP landscape & wondering how this single step conversion, migration and scale-out approach could fit into your strategy reach out to Deloitte and AWS

Authors



Puneet Aggarwal

Senior Consultant

Deloitte Consulting LLP

Offering AWS Alliance Leader

punaggarwal@deloitte.com



Piyush Bhandari

Managing Director

Deloitte Consulting LLP

Offering AWS Alliance Leader

pibhandari@deloitte.com



Sachin Bhatt

Sr. Partner Solutions Architect

Amazon Web Services

ebhattsa@amazon.com

Deloitte.

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