

AWS re:Invent

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How SAP migration is supporting NVIDIA's cloud-first strategy

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Amazon Web Services



About Nvidia

ACCELERATED COMPUTING ACROSS THE FULL-STACK AND AT DATA CENTER SCALE



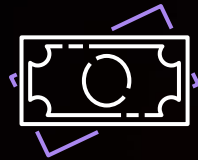
NVIDIA is built like a computing stack or neural network—in four layers: hardware, system software, platform software, and applications. Each layer is open to computer makers, service providers, and developers to integrate into their offerings however best for them.

SAP at Nvidia

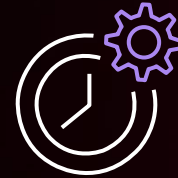
SAP IS THE BACKBONE OF OUR BUSINESS OPERATIONS, SUPPORTING KEY FUNCTIONS SUCH AS



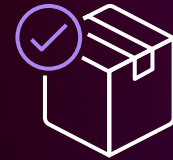
Finance



Sales



**Production
Planning**



Supply Chain

ERP landscape system details

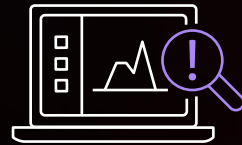
	OnPrem	Cloud
SAP systems	Single SAP Central Instance Single DB node Single Node with storage replication	SAP ERS Multiple App server on Multi-AZ Windows/Linux/Any DB Multi-AZ cluster AG for local HA Always on AG for DR SAP Enqueue replication(ERS) SUSE Linux, Sybase ASE, HA cluster and DR
File Share	Single Node	Amazon FSx ONTAP
Backup	Veritas backup	Commvault Enterprise Backup Solution
SAP S4 HANA		SAP Central Finance

Drivers for migrating SAP to the cloud

8 months

Before an impending data center contract would renew, locking us into high costs and low flexibility for another 3 years

For the program to be a success, our cloud solution had to:



Strengthen security posture



Improve agility and scalability



Improve availability and minimize downtime

Inside our SAP Migration



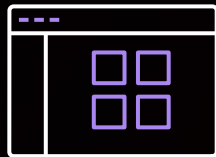
Our AWS Landing Zone

SAP WAS OUR FIRST MAJOR WORKLOAD ON AWS, SO IT WAS CRITICAL THAT WE ESTABLISH A CLOUD FOUNDATION:



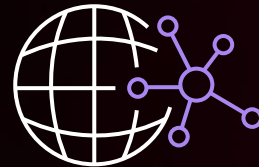
Security

- Account structure
- Guardrails (IAM provisioning, AWS Config, MFA)
- Secure connectivity



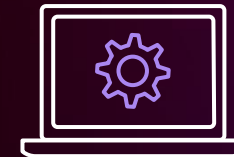
Shared services

- Domain Name System (DNS)
- LDAP
- Time management



Network topology

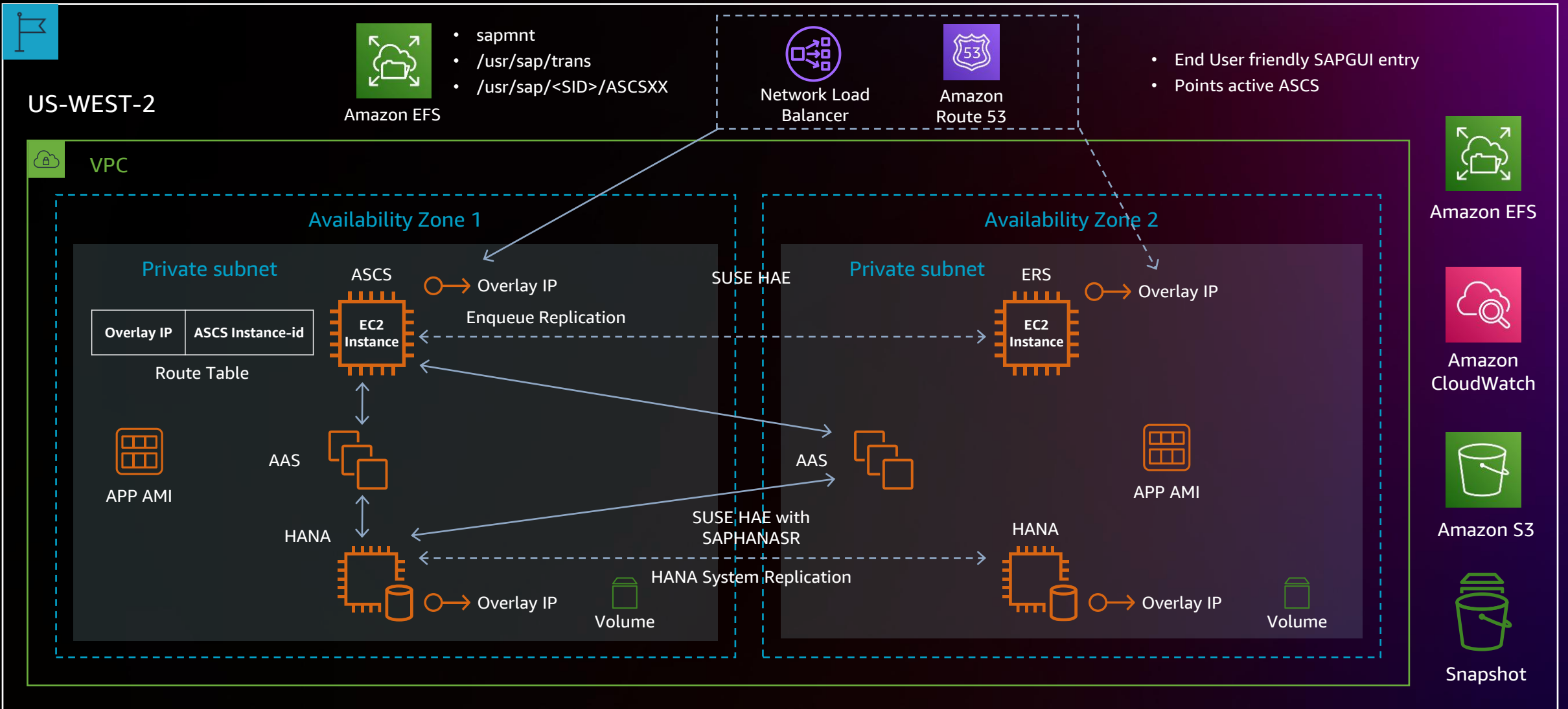
- Direct Connect, Transit Gateway, Peering
- VPC IP space/ subnet division
- Account/ VPC configuration



Operations optimization

- Tagging strategy
- Cost optimization/automation
- CI/CD pipelines

Multi AZ High Availability for HANA – SUSE HAE



Our SAP Migration Strategy

Infrastructure configuration and deployment

Automate build with AWS Launch Wizard

Backup/Restore

Homogenous migration (Windows to Windows)

SAP Export/Import

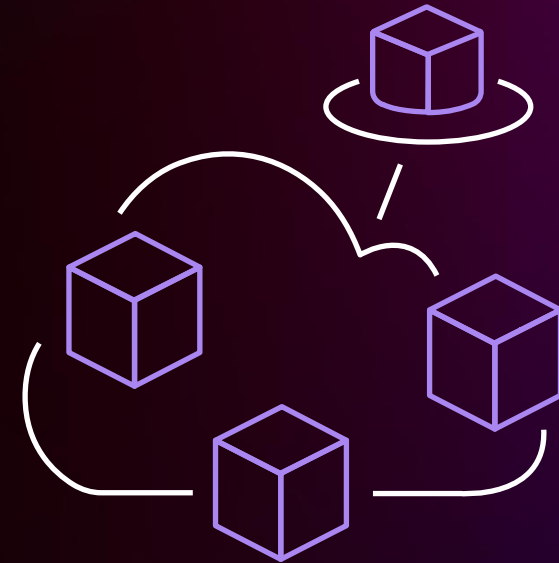
Heterogenous migration (Windows to Linux)

AWS Migration Hub

re-platform of 3rd Party Apps*

File share

AWS Storage Services (DataSync, Snowcone)



Deploying SAP using AWS Launch Wizard vs. on-premises

On-Premises

Application and Basis Teams

Basis Team

Infrastructure Teams

Application Specific Configuration

HANA, NetWeaver, S/4HANA Install

Server and Storage Configuration

Operating System deployment and Storage allocation

Infrastructure and network setup

On AWS

Application and Basis Teams

AWS Launch Wizard

AWS/Nvidia (EC2/ VPC)

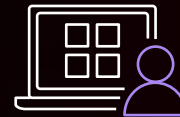
AWS (EBS/EFS)



Why we chose AWS Professional Services



Proven track record delivering successful enterprise migration/ transformation

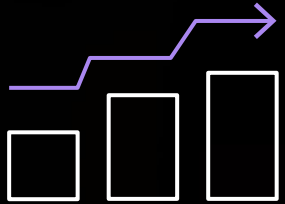


Deep AWS + SAP expertise

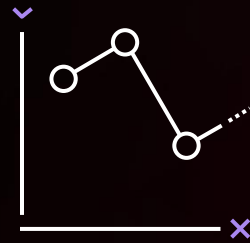


Specialized SAP migration tools

Build business continuity and disaster recovery testing into your migration

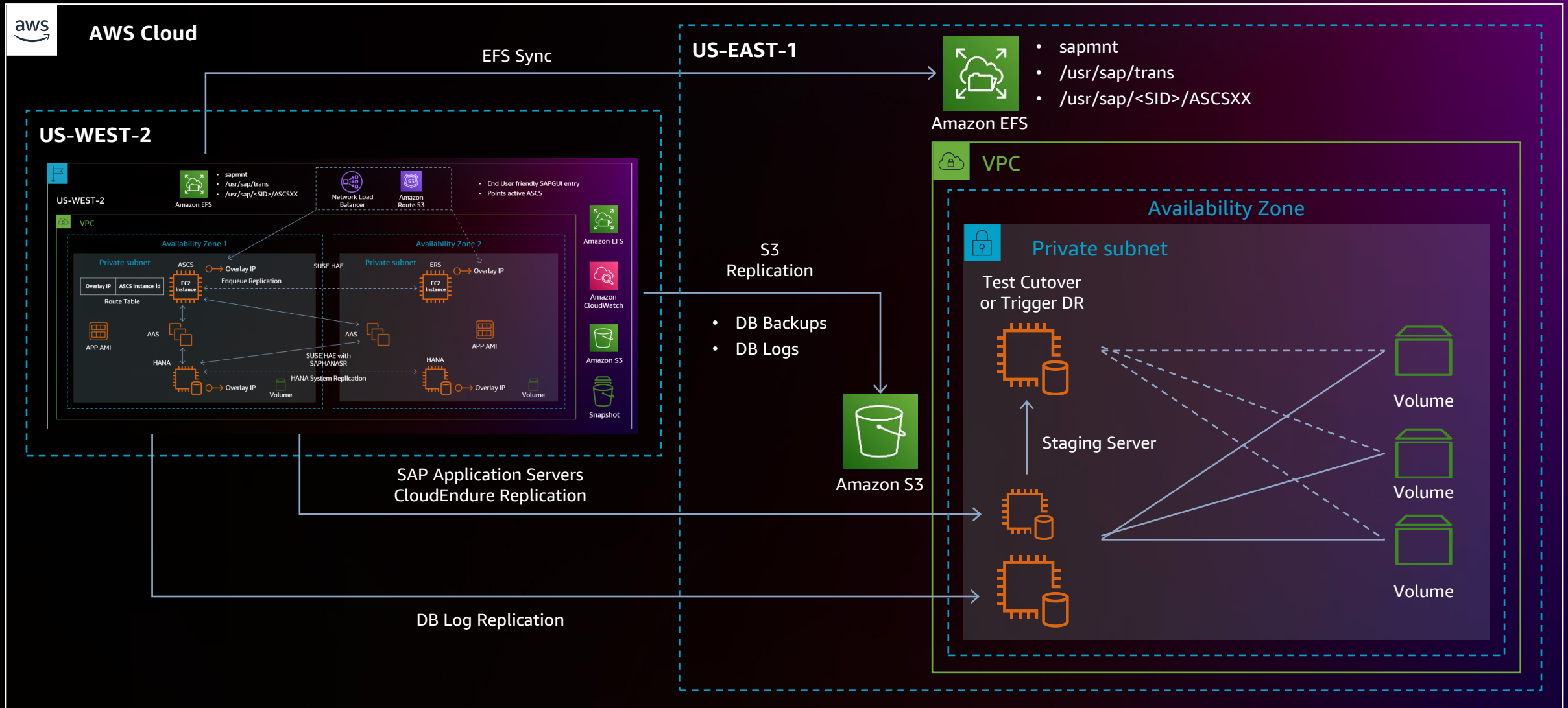


Resigned new DR strategy on AWS to improve RPO & RTO



Successful DR test cycle before go live with no impact to live production

Pilot Light DR Architecture – Using DB replication and CloudEndure



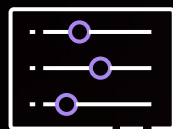
Why we're migrating to Amazon FSx for NetApp ONTAP

THE FIRST COMPLETE, FULLY MANAGED ONTAP FILE SYSTEM IN THE CLOUD

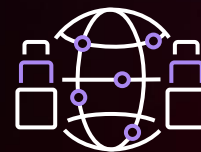


Amazon FSx for
NetApp ONTAP

*Certified for production
SAP HANA workloads*



Fully managed,
PB+ scale



Single-AZ or
Multi-AZ



High
performance



Snapshot, clone,
and replicate
your data



Built-in storage
efficiency and
elastic tiering



Accessible and
multi-protocol
(NFS, SMB, iSCSI)

Challenges encountered during our migration

Challenge

Resolution

Limited landing zone at the start of the project caused rework & delays at critical stage



Zero-trust architecture for VPCs

Limited AWS skills



Leveraged AWS Professional Services to train team and ensure project success

Migrating on-premises interface directories supporting millions of files



Amazon FSx for NetApp ONTAP

Our acquisition of Mellanox

Press Release

NVIDIA Completes Acquisition of Mellanox, Creating Major Force Driving Next-Gen Data Centers

Combined Company Provides Leading Expertise in Compute and Networking Technologies for High Performance Computing

Monday, April 27, 2020



NVIDIA today announced the completion of its acquisition of Mellanox Technologies, Ltd., for a transaction value of \$7 billion.

The acquisition added required us to solve for several additional variables:

- Introduction of SAP S/4HANA into Nvidia IT landscape
- Integration of Mellanox into Single ERP platform
- Automatic system builds, data refreshes and quality testing
- On-demand project landscapes

Our move to S/4HANA Central Finance

GAINING NEW FINANCIAL CAPABILITIES WHILE SETTING THE STAGE FOR OUR BROADER S/4HANA TRANSFORMATION:

CFIN:

Realtime replication of Finance data from ECC

Group Reporting:

Corporate Consolidations – Elimination, Translation & Statutory Reporting.

MDG:

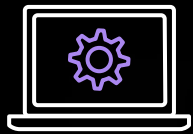
Finance master data governance for GL, Cost Center, and Profit Center



Results and lessons learned



SAP landscape modernizations



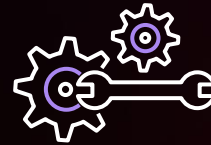
Operating system

- Linux first
- SUSE Live Patching
- AWS patch manager for simplified EC2 patching



Database

- DBs converted to Sybase ASE
- Multi AZ High Availability Database clusters
- DB Replications for DR



Operations and management

- CI/CD for Implementing Infrastructure deployments
- CloudFormation templates to address IaC
- Adopting AWS Launch Wizard for SAP



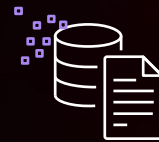
Security and compliance

- Encryption at rest with CMK and rotation
- Enable S3 versioning/Object lock for data loss protection
- AWS Lacework for audit & compliance

Business benefits of running SAP on AWS



Meeting Finance Close process SLA



Improve TTM with rapid data refresh, improved QA data quality



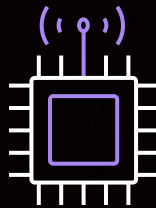
Scale up/build new landscapes in days for repeat integration testing and data validation

Lessons learned



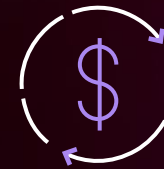
People

- Get clear on roles, responsibilities, and operating model
- Cadence calls with AWS
- Minimize stakeholders where you can



Technology

- Build your cloud landing zone first; don't skimp on the pre-requisites
- Include testing in your migration planning to minimize post go-live disruption
- Continued SKU upgrades



Cost Optimization

- Account for impact of backup/restore/retention policies
- Use AWS tools and programs: Trusted Advisor, EC2 Savings Plans
- Re-assess costs post-migration (and don't be afraid to make changes)

Our checklist for successful SAP migration



Application compatibility



Availability/ latency aligned with SLAs



Technical upgrades



DR Strategy

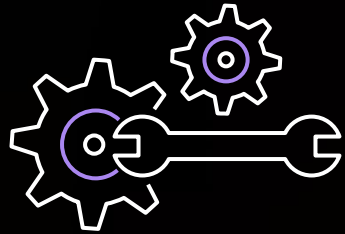


AWS Landing Zone

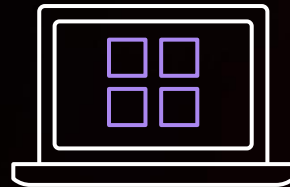


Testing/mock cutovers

What's next for SAP on AWS at Nvidia?



Automated
SAP backups



Amazon FSX for
NetApp ONTAP



Moving additional
business processes to
S/4HANA modules

Getting started with SAP on AWS

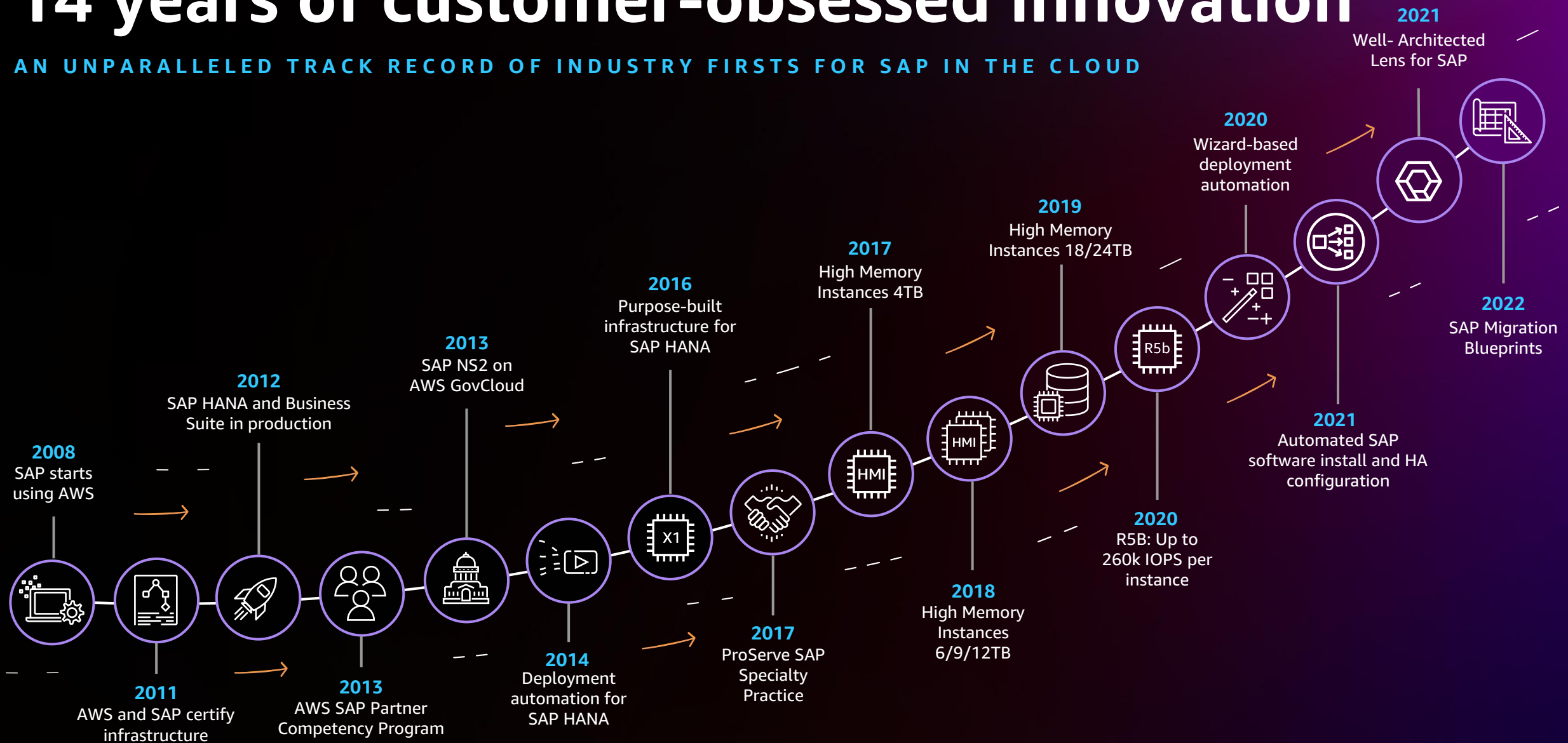
Brian Griffin

SAP Practice CTO, AWS Professional Services



14 years of customer-obsessed innovation

AN UNPARALLELED TRACK RECORD OF INDUSTRY FIRSTS FOR SAP IN THE CLOUD



Thousands of SAP customers trust AWS

HEALTHCARE & LIFE SCIENCES



ENERGY & NATURAL RESOURCES



RETAIL & CONSUMER GOODS



MEDIA & ENTERTAINMENT



PUBLIC SECTOR & DEFENSE



AUTOMOTIVE & TRANSPORTATION



MANUFACTURING & INDUSTRIAL



AGRICULTURE, CPG, & FOOD/BEV



PROFESSIONAL/ FINANCIAL SERVICES



TECHNOLOGY



Gartner recognizes AWS as a Leader for the 12th straight year

[Magic Quadrant for Cloud Infrastructure and Platform Services](#)

We believe this report validates AWS's leadership to innovate and set standards for cloud computing. Millions of active customers every month and more than 100,000 Partners from over 150 countries choose AWS to deliver their business goals.

Read the full [report](#) to appreciate the details.

Gartner, Magic Quadrant for Cloud Infrastructure & Platform Services, Raj Bala, Dennis Smith, Kevin Ji, David Wright, Miguel Angel Borrega, 19 October 2022. Gartner and Magic Quadrant are registered trademarks of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose. This graphic was published by Gartner, Inc. as part of a larger research document and should be evaluated in the context of the entire document. The Gartner document is available upon request from AWS.

Figure 1: Magic Quadrant for Cloud Infrastructure and Platform Services



ISG recognizes AWS as an SAP HANA Infrastructure Services Leader for the 5th straight year

“AWS has more than a decade of experience in hosting SAP workloads and offers a wide array of choices for customers. It has the most market share and the largest SAP on AWS partner ecosystem in the U.S... AWS offers a robust and secure infrastructure platform for clients to run their most mission-critical SAP workloads.”



Introducing the AWS SDK for SAP ABAP



Makes it easy for ABAP developers to extend and transform SAP-based business processes by harnessing the power of AWS services natively using the SAP ABAP language.



Accelerate business process innovation

by giving ABAP developers native access to all 300+ AWS services



Reduce architectural complexity

by eliminating the need to manually create complex integrations between SAP and AWS services



Maintain a strong security posture

by encrypting all payloads with HTTPS and enforcing SAP-level permissions



Upskill ABAP development teams

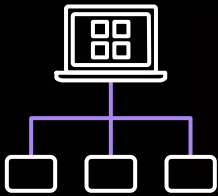
by making it easy to for them to build cloud-based solutions

What's new for SAP on AWS?



Migration

- Migration Hub Orchestrator
- Improvements to Migration Acceleration Program for SAP workloads



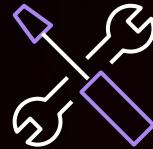
Infrastructure

- Intel Ice Lake based EC2 instances (X2i, R6i, M6i and C6i)
- AMD Milan based EC2 instances (R6a, M6a and C6a)
- Virtualized 18TB and 24TB High Memory instances
- Amazon FSx for NetApp ONTAP (FSxN)
- Support for SAP HANA host auto-failover with FSxN
- AWS Backup Service support for SAP HANA



Innovation

- Bi-directional data flows with AppFlow
- AppFlow ODP Support
- AWS SDK for SAP ABAP



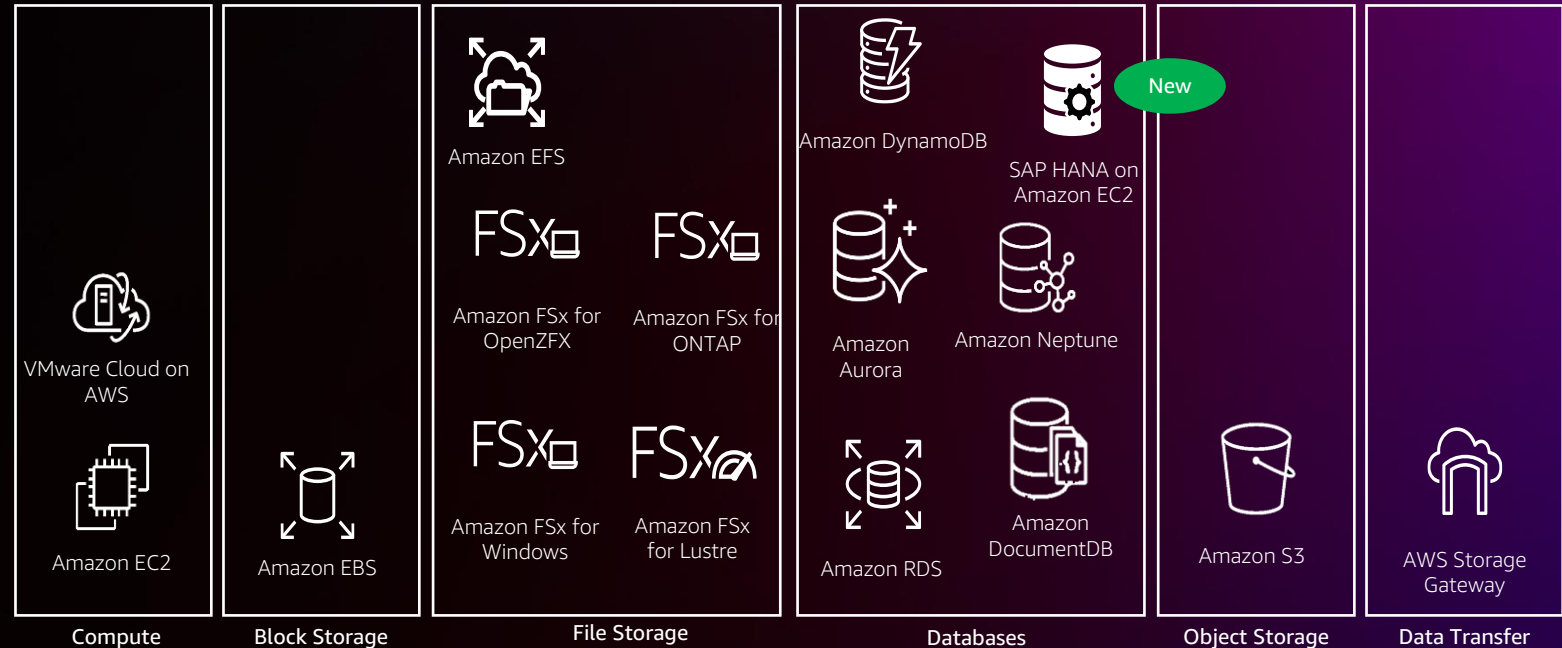
Management and Operations

- Launch Wizard improvements
 - Scale deployments
 - Clone deployments
 - Solution Manager
- AWS Systems Manager support for SAP
- Observability for NetWeaver using AppInsights



AWS Backup support for SAP HANA

- A **fully managed, policy-based backup service** that makes it easy to centrally manage and automate the backup of data across AWS services
- Provides **application-consistent** log and data backups of SAP HANA databases running on EC2
- Easily **restore your SAP HANA** applications to a per-second Granularity
- Create **immutable backups** and simplify compliance monitoring



Lilly

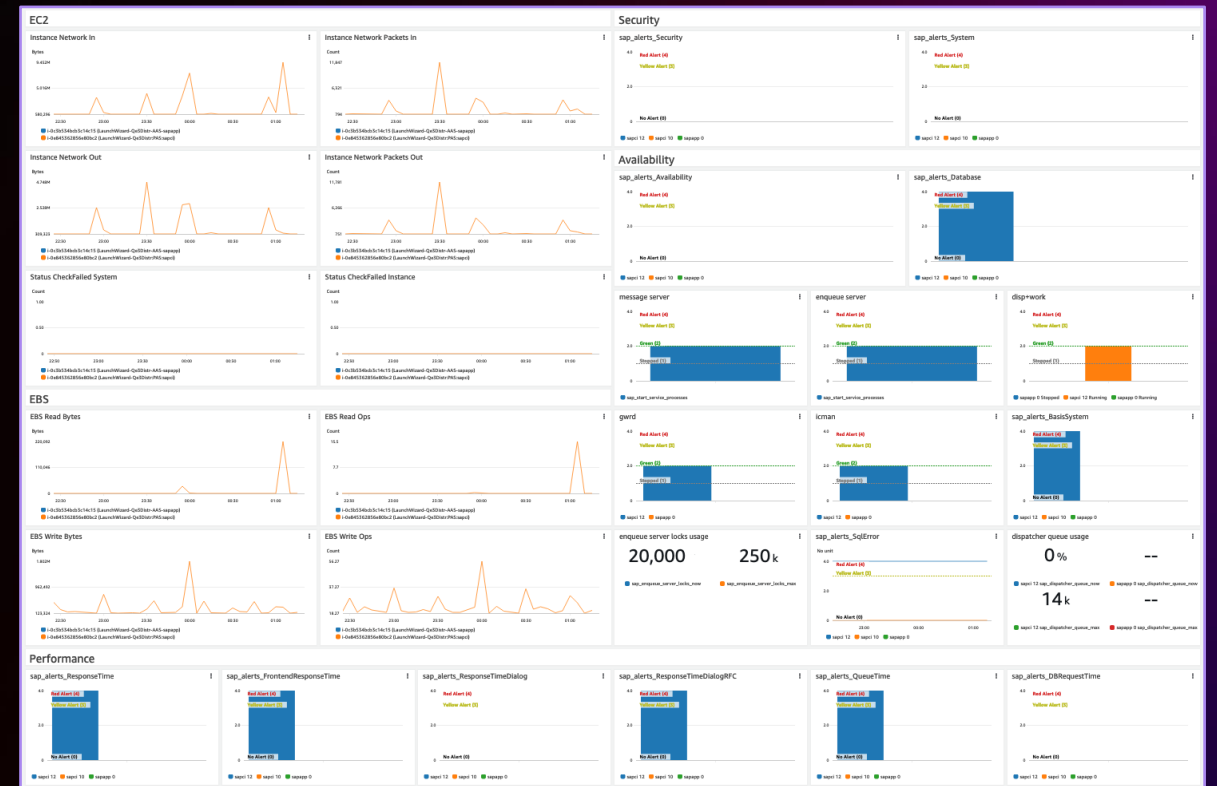
*"Based on our participation in the beta program, we believe AWS Backup for HANA on EC2 will significantly **simplify our existing HANA backup automation solution**. Being able to leverage a single AWS-native service with no need for custom development creates a valuable opportunity to **reduce our operational support and maintenance efforts** ..."*

– Eli Lily

Cloud Watch Application Insights for **SAP NetWeaver & HANA**

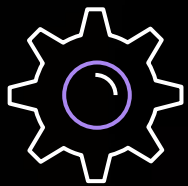
Enable SAP technical teams with observability across the entire SAP technical stack.

- Automatic dashboards
- Problem detection and notification
- Insights that point to potential root causes
- Automatic setup of monitoring for application resources
- Supports for High Availability landscapes and cluster monitoring
- Uses AI/ML to analyze NetWeaver and HANA system metrics, determine normal baselines, and surface anomalies with minimal user intervention.



SAP Lens for AWS Well-Architected Framework

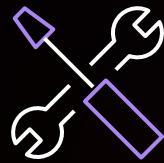
CUSTOMER-PROVEN DESIGN PRINCIPLES AND BEST PRACTICES FOR ENSURING SAP WORKLOADS ON AWS ARE WELL-ARCHITECTED ACROSS:



Operational
Excellence



Security



Reliability



Performance
Efficiency



Cost
Optimization



Sustainability

AWS Professional Services Global SAP Practice

BRIDGE THE SAP ↔ CLOUD SKILLS GAP AND ACHIEVE DESIRED BUSINESS OUTCOMES WITH THE WORLD'S FOREMOST SAP ON AWS EXPERTS

Complementary offerings

- SAP on AWS Discovery
- SAP HA on AWS Discovery
- DevOps for SAP
- Analytics for SAP
- SAP Extend Discovery

Launch offerings

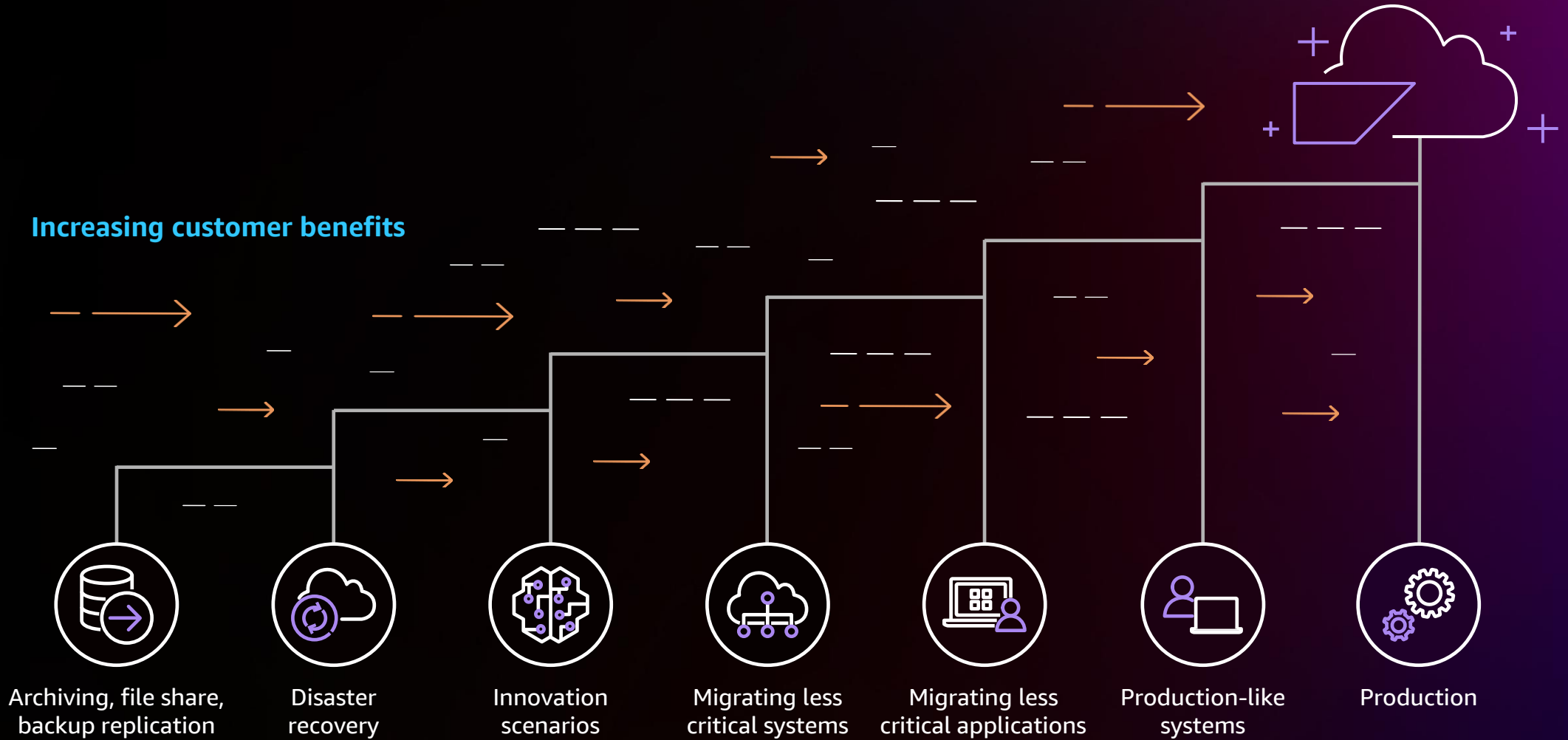
- DevOps for SAP
- Analytics for SAP
- S/4HANA on AWS
- SAP on AWS Resident Architect
- GxP Compliance Automation for SAP

Delivering successful SAP migration and transformation for industry leaders including:



Cloud On-Ramps for SAP on AWS

DRIVE RAPID TIME TO VALUE WHILE YOU BUILD YOUR SAP ON AWS SKILLS



Next steps to start your journey

Work with us



Complementary discovery workshops



Work with AWS Professional Services SAP/ERP Specialty Practice



Work with an AWS SAP Competency Partner



Explore the AWS Migration Acceleration Program

Explore SAP on AWS

aws.amazon.com/sap

aws.amazon.com/sap/case-studies

Thank you!

