
AWS
re:Invent

ENT203

SAP transformation and GxP compliance at Bristol Myers Squibb

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Agenda

Bristol Myers Squibb company mission and vision

SAP S/4HANA transformation objective

Our GxP compliance requirements

Qualification

Validation

Benefits realized

Lessons learned

Future plans

SAP Deployment Framework

AWS architecture



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Bristol Myers Squibb™

Our mission

To discover, develop and deliver innovative medicines that help patients prevail over serious diseases



Bristol Myers Squibb™

Our vision

To be the world's leading biopharma company that transforms patients' lives through science



BMS SAP S/4HANA transformation objective



Migrate SAP ECC before end-of-support date (2025)**



Cloud First Initiative as part executive initiative



Reduce SAP management cost

** When BMS started their S/4HANA project(2018), the official end-of-support date was 2025, which was later extended to end of 2027 with an extended maintenance through to the end of 2030

BMS SAP GxP compliance requirements



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BMS SAP GxP compliance requirements

Qualification process change

- Infrastructure provisioning (on-premises vs. AWS)
- Operating system
- Database platform (3)
- SAP system installation (25)
- Backup/recovery and security controls

Qualification process



BMS SAP GxP compliance requirements

Validation process change

- Migration tools
  - Software Update Manager (DMO)
  - SAP nZDT (near zero downtime)
  - SAP export/import
- Data verification process
- Software upgrades

Validation process

Existing

SUM DMO

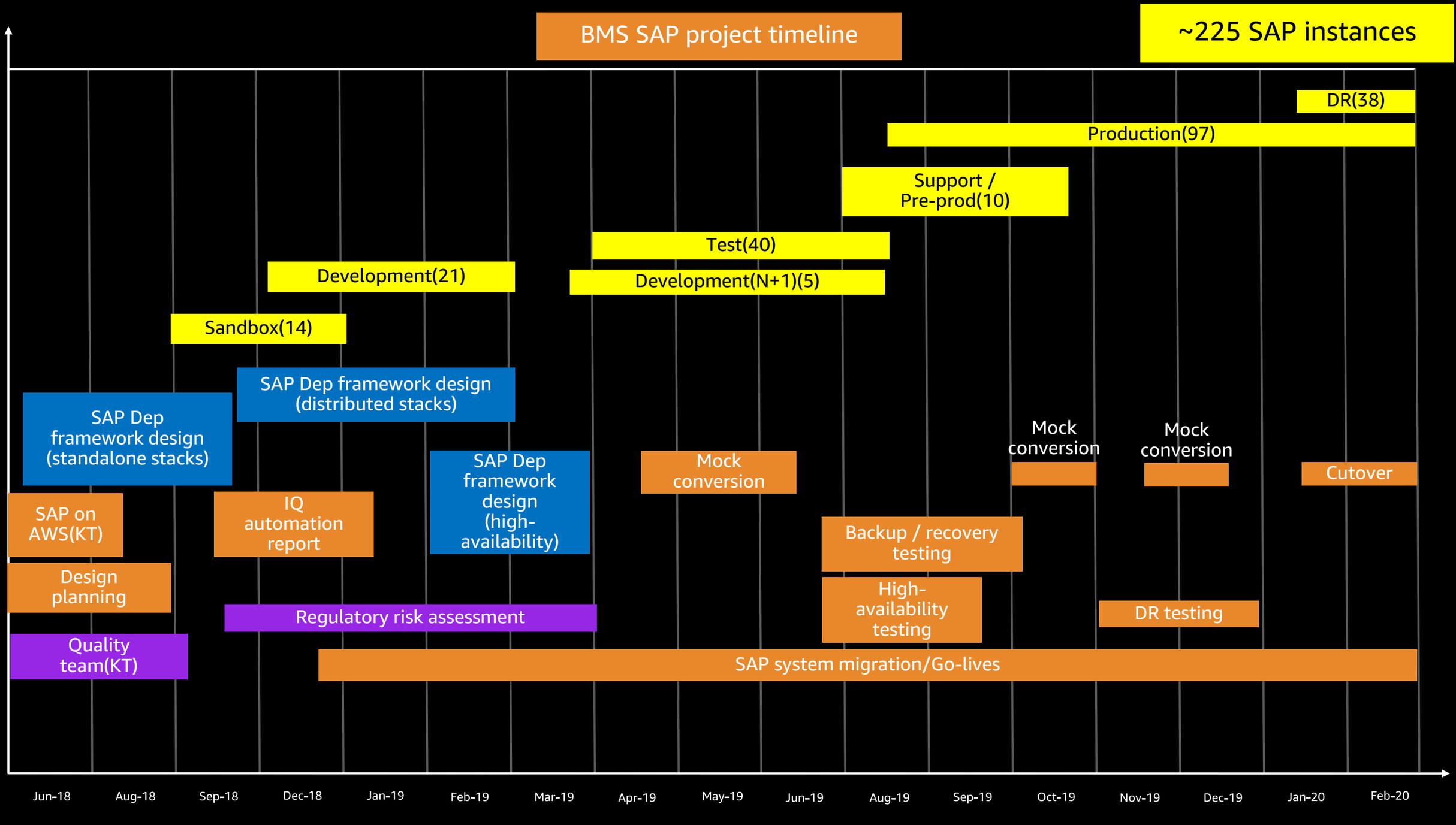
SAP export/import

Software upgrades

New

SAP nZDT

Data verification process


BMS SAP project timeline
~225 SAP instances
DR(38)
Production(97)
Support / Pre-prod(10)
Test(40)
Development(21)
Development(N+1)(5)
Sandbox(14)
SAP Dep framework design (distributed stacks)
SAP Dep framework design (standalone stacks)
Mock conversion
Mock conversion
Cutover
SAP Dep framework design (high-availability)
Mock conversion
SAP on AWS(KT)
IQ automation report
Backup / recovery testing
Design planning
High-availability testing
DR testing
Regulatory risk assessment
Quality team(KT)
SAP system migration/Go-lives
Jun-18
Aug-18
Sep-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20

End results



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Benefits realized



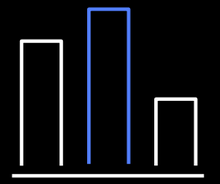
Accelerate innovation by rapidly launching SAP instances



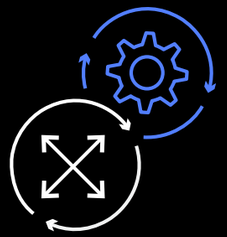
Engaging quality team



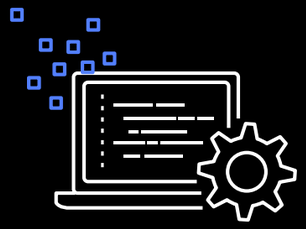
90% reduction in efforts
67% reduction in cost
(SAP system provisioning)



50% reduction for OS/DB and SAP application



Automated build process



Digitized SDLC / Validation artifacts

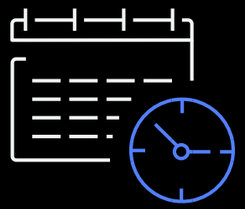


Freed up SAP migration / Basis team

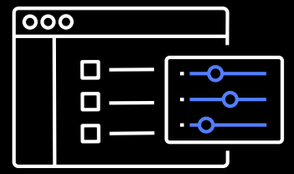


Achieved 20% cost reduction on monthly AWS spend

Lessons learned and highlights



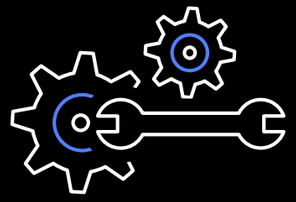
Follow a specific timeline and ensure cost control



Perform SAP HA/DR testing as part of QA system migration



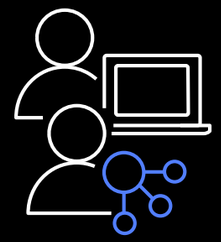
Resize Amazon EC2 instances and reclaim temporary storage



Resize the system once you are on AWS (capacity planning) and perform cost assessment



Engage AWS ProServe team



Engage technical staff and provide frequent KT sessions

Future projects



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Future plans

Project track

- Onboard thousands of new SAP users as part of Celgene Merger to BMS S/4HANA system
- Migrate / transform business data from several Celgene legacy systems to BMS S/4HANA system

AWS innovation track

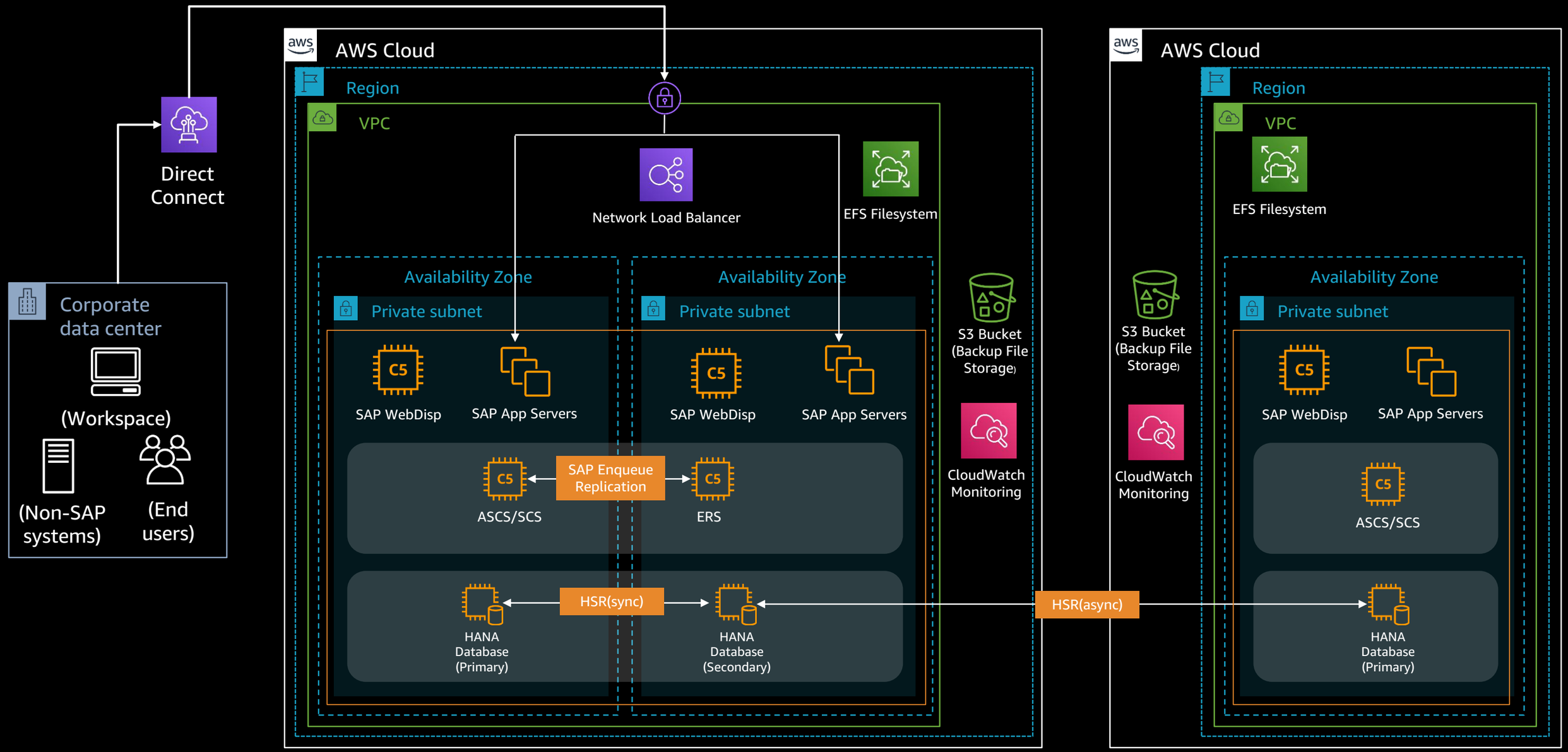
- Build GxP-compliant automation solutions to accelerate monthly SAP system refreshes:
  - SAP BWoH (HANA Scale-out)
  - SAP S/4HANA (HANA Scale-up)
  - SAP Netweaver systems (ASE database)
- Automate stop / start schedules for non-production SAP workloads based on usage patterns
- Implement predictive auto-scaling solution based on historical workload demand for SAP application servers

Approach

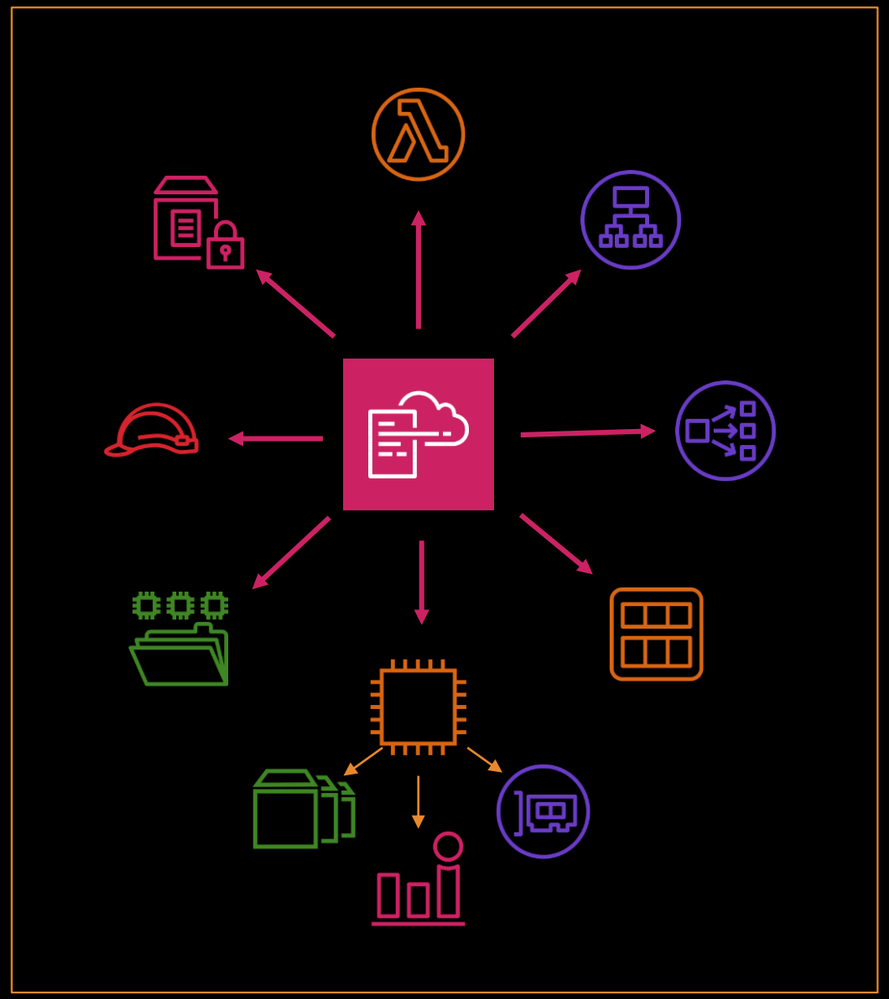


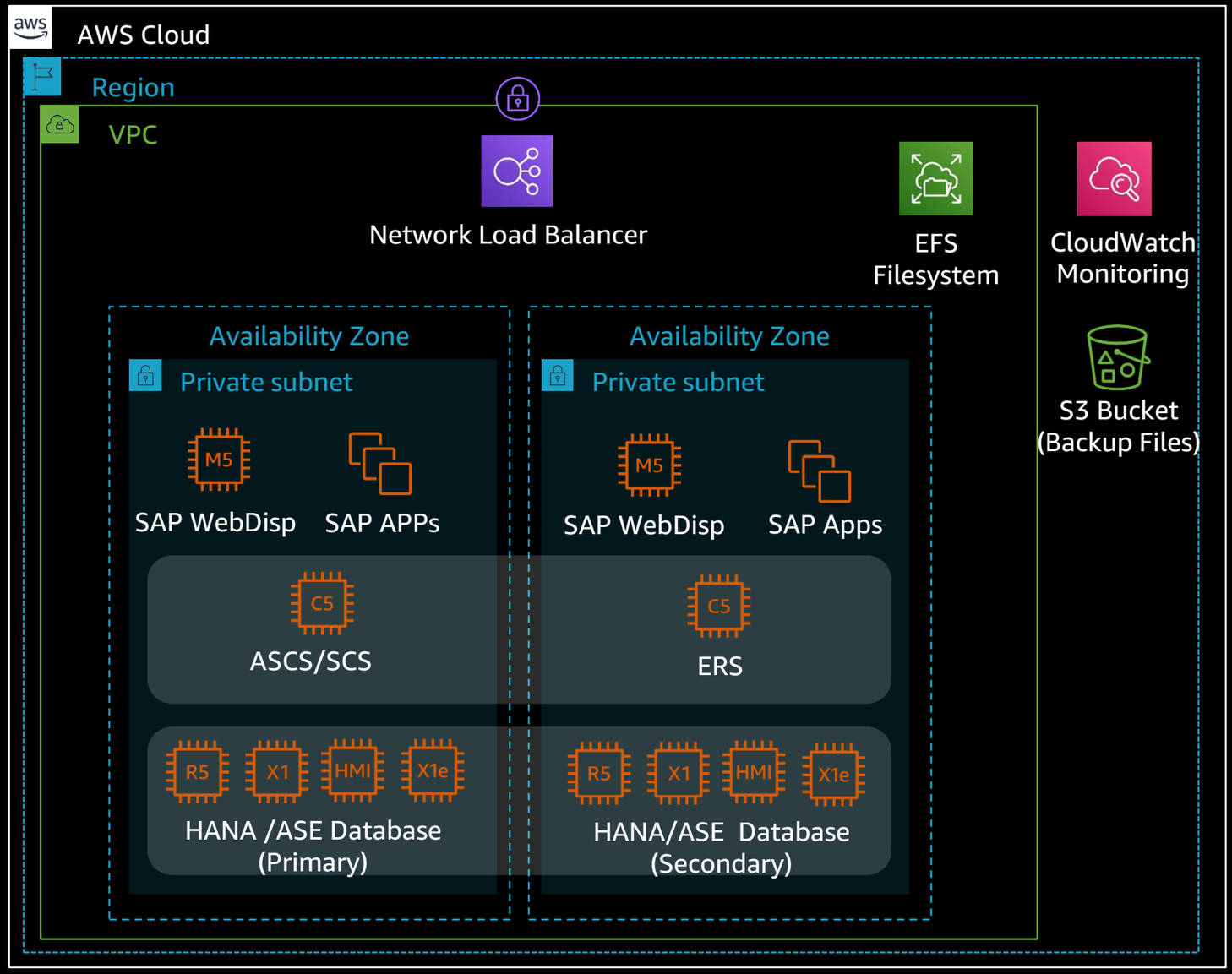
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HA DR architecture



SAP deployment framework





Evidence collection

```
xxxdb01:/var/log # cat xxxxdb01-deployment.log
2020/08/25:15:15:03 ##############################################
2020/08/25:15:15:03 ##############################################
2020/08/25:15:15:03
2020/08/25:15:15:03 **********SAP Server Specification**********
2020/08/25:15:15:03
2020/08/25:15:15:03 Hostname:        xxxdb01          ---> HOSTNAME
2020/08/25:15:15:03 ServerType:      DB               ---> SERVER TYPE
2020/08/25:15:15:03 DatabaseType:    HDB              ---> DATABASE TYPE
2020/08/25:15:15:03 ApplicationType: N/A

2020/08/25:15:15:03
2020/08/25:15:15:03 ## Additional Information on Server Specification
2020/08/25:15:15:03
{
  "accountId" : “xxxxxxx",                            ---> AWS Account No
  "architecture" : "x86_64",
  "availabilityZone" : “xx-xxx-x",                    ---> Availability Zone
  "billingProducts" : null,
  "devpayProductCodes" : null,
  "marketplaceProductCodes" : [ “xxxxxxxxxxxxxxxxxxxx" ],  ---> AWS Marketplace Product Id
  "imageId" : "ami-xxxxxxxxxxxxxxxx",                 ---> AMI ID ( Amazon Machine Image)
  "instanceId" : "i-04089eaefxxxxxx",                 ---> Amazon EC2 Instance-Id
  "instanceType" : "r5.12xlarge",                     ---> Amazon EC2 Instance Type
  "kernelId" : null,
  "pendingTime" : "2020-08-25T15:13:47Z",
  "privateIp" : "10.0.3.90",                          ---> Private IP Address
  "ramdiskId" : null,
  "region" : “xx-xxxx-x”,                             ---> AWS region
  "version" : "2017-09-30"
}2020/08/25:15:15:03
```

Evidence collection

2020/08/25:15:19:56 installsap()
2020/08/25:15:19:56 Info: Begin Installing SAP HANA System.
2020/08/25:15:19:56 Info: Configuring EFS shares for /sapmnt and /usr/sap/trans shared Filesystems
2020/08/25:15:20:02 Info: Successfully configured EFS fileshare
2020/08/25:15:20:02 Info: Configuring EFS shares for /sapmnt and /usr/sap/trans shared Filesystems
2020/08/25:15:20:17 Info: Successfully configured EFS fileshare
2020/08/25:15:20:17 Info: Changing Parameter Values for SAP Installation Configuration file.
2020/08/25:15:20:17 Info: Configuring hdblcm Parameter file according to HANA Specification
2020/08/25:15:20:17 Info: hdblcm Parameter file configured successfully
2020/08/25:15:20:17 Info: Starting HANA Installation → Database Installation Evidence
2020/08/25:15:20:17 Info: Identifed NVMe EBS Volume configuration.
2020/08/25:15:20:17 Info: Mapping EBS Volumes for Device Parameters
2020/08/25:15:20:18 Info: NVMe EBS Volume mapping completed
2020/08/25:15:20:18 Info: Creating HANA DB filesystems
2020/08/25:15:20:18 Info: Successfully Identified EBS Volumes for HANA Filesystem Creation
2020/08/25:15:20:18 Info: Continuing with HANA FS creation
2020/08/25:15:20:33 Info: Successfully created HANA DB Filesystems
2020/08/25:15:20:33 Info: Downloading HANA Media files from s3 bucket
2020/08/25:15:22:20 Info: Successfully downloaded HANA Media Files.
2020/08/25:15:22:20 Info: Extracting HANA Software under /SAPEXPORTS/NW75 location.
2020/08/25:15:24:11 Info: Successfully downloaded and extracted HANA Media Files from S3 Bucket.
2020/08/25:15:24:11 Info: Validating FS Mount consistency
2020/08/25:15:24:16 Info: Installing HANA DB instance
2020/08/25:15:29:29 Info: Performing HANA DB Restart Test
2020/08/25:15:31:07 Info: Performing HANA DB HealthCheck after Restart
2020/08/25:15:31:51 Info: SAP HANA Database Installation Completed Successfully. → Integrated IQ checks for as part of System Deployment
2020/08/25:15:31:51 Info: Finalizing HANA Deployment by sending a success status to AWS CloudFormation → Error Handling logic for ensuring consistency
2020/08/25:15:31:51 Info: **END of SAP HANA Deployment**

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For Customers

Future-proof your enterprise: Why SAP customers choose AWS (ENT202)

How Newmont migrated to SAP HANA while acquiring GoldCorp (ENT206)

SAP Smart Factory: Inside VW's digital production platform (ENT311)

How Zalando tracks business performance in near-real time (ENT207)

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Looking beyond infrastructure to drive your SAP business (GPS206)

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