

Replication Futures for SAP ASE, On-Premise and in the Cloud Webinar

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PUBLIC

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Our Commitment to SAP ASE and SAP IQ Customers

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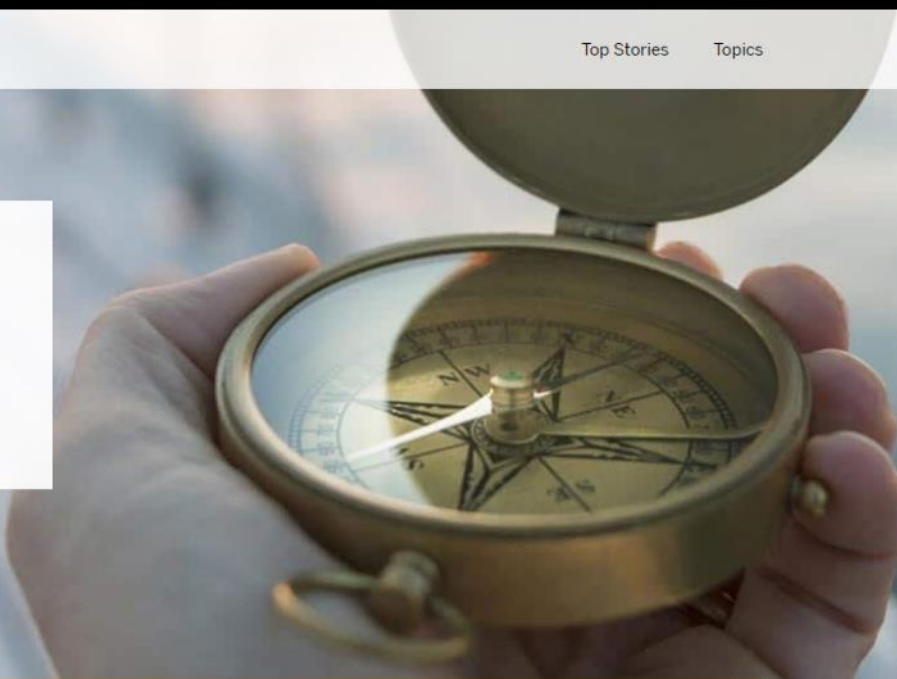
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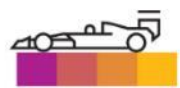
SAP ASE and SAP IQ: The Next Generation

November 27, 2019 by Irfan Khan, Gerrit Kazmaier

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For decades, more than 30,000 customers worldwide have relied on the high-performance SAP Adaptive Server Enterprise (SAP ASE) and SAP IQ database systems to power their businesses. These customers include 90 percent of the top 50 banks and security firms.



Drive faster, more reliable OLTP for less with SAP ASE

Our Commitment to SAP ASE and SAP IQ Customers

On-Premise Stability

SAP ASE and SAP IQ will have a long support cycle and confidence of multiple-year support

- New release of SAP ASE 16 planned for 2020
- In April 2020 we announced that we will be releasing ASE 16.1 that will have an EOMM date of 31/12/2030
- New release of SAP IQ planned for 2021 New Cloud services will provide a flexible option for ASE and IQ customers to move on-premise workloads to the cloud

Cloud Innovation

SAP HANA Cloud will include new managed services based on SAP ASE, SAP IQ, and SAP Replication Server

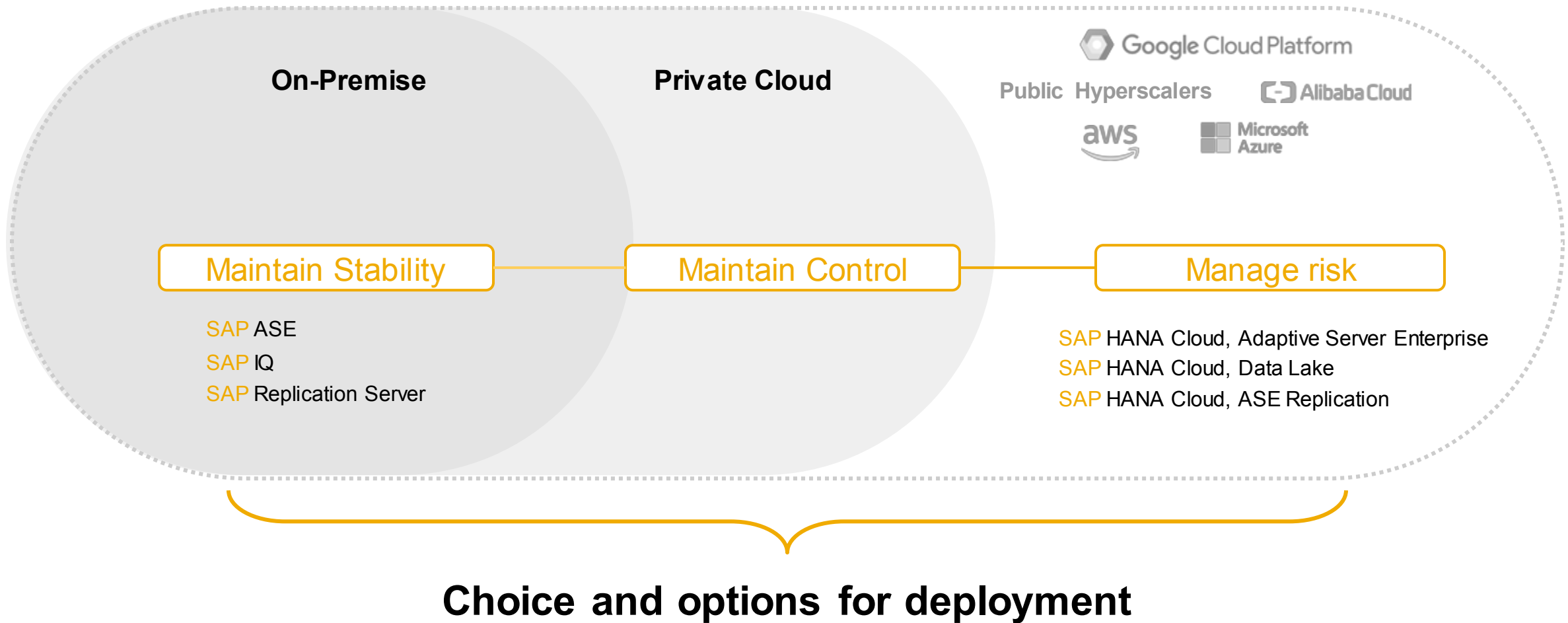
- Customers will benefit from a managed solution, elastic scaling, on-demand deployment, and consumption-based pricing.
- Customers will benefit from the additional services offered by SAP HANA Cloud – such as data virtualization or advanced analytics capabilities to all of their data.

* SAP announces future product versions, options, and maintenance extensions with significant lead times in consideration of our customers' changing requirements.

Note: This is the current state of planning, and may be changed by SAP at any time without notice.

SAP ASE, IQ and SRS on Premise and Native-Cloud Releases

SAP Strategy





SAP Business Technology Platform

Cloud Data Ecosystem



SAP HANA Cloud

Next-gen database platform as-a-service with full capabilities to manage OLTP, OLAP and HTAP workloads



SAP Data Warehouse Cloud

End-to-end data warehouse in the cloud that combines data management processes with advanced analytics.



SAP Analytics Cloud

Analytics technology – business intelligence (BI), planning, and predictive analytics – in a single solution

SAP ASE and IQ in SAP HANA Cloud

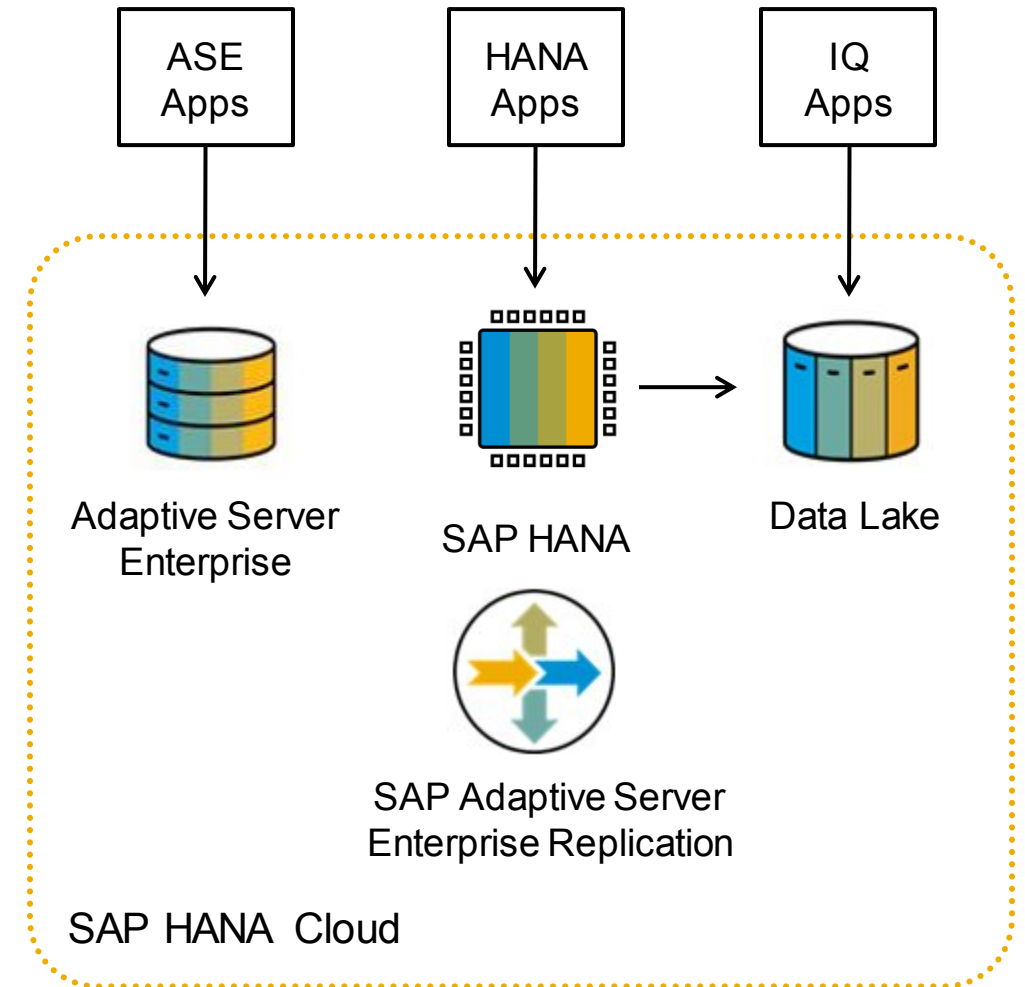
Compatible: Existing ASE applications will run within a new Adaptive Server Enterprise service and existing IQ applications will run within the Data Lake service. In addition we will add the ability to run Replication Server in a new Adaptive Server Enterprise Replication service, to ensure parity with on-premise architectures.

As a service: Elastic scale, on-demand provisioning, consumption-based pricing

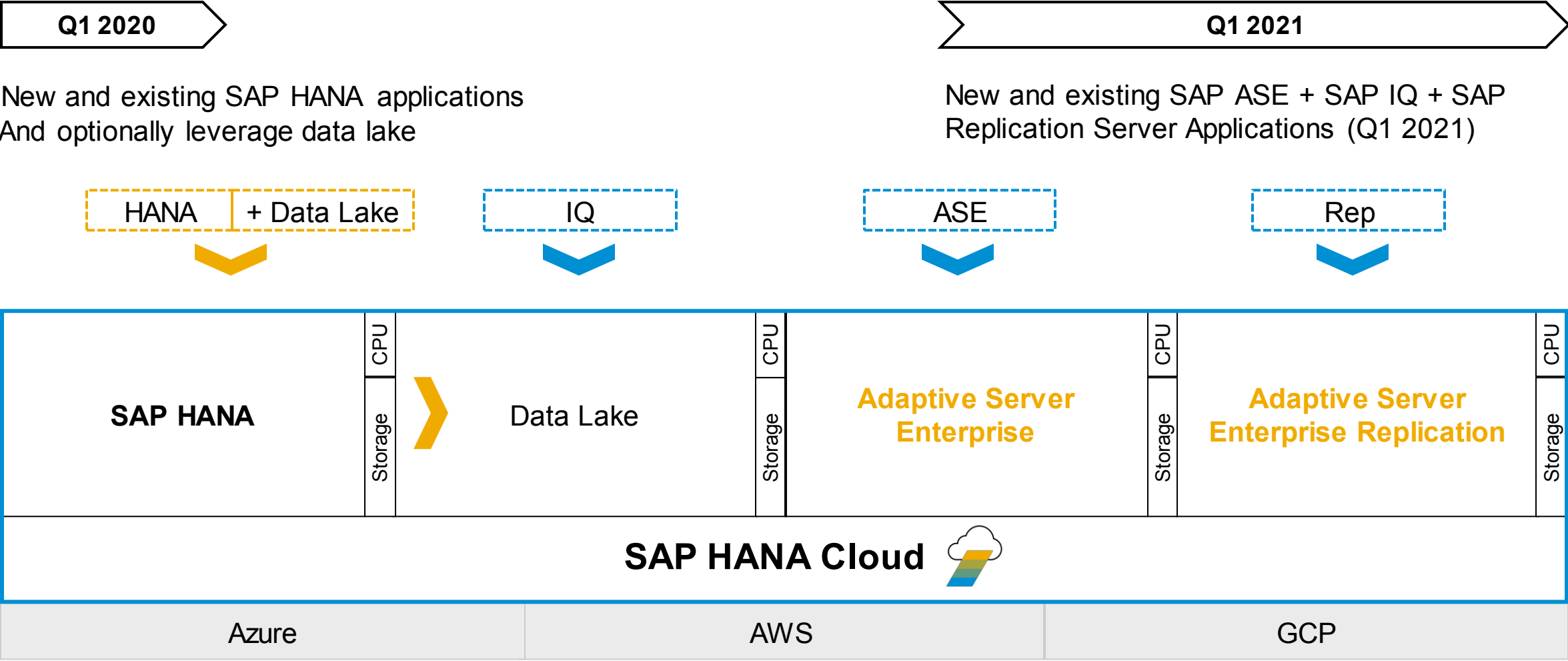
Managed: Database managed by SAP

Cloud choice: AWS, Azure or GCP

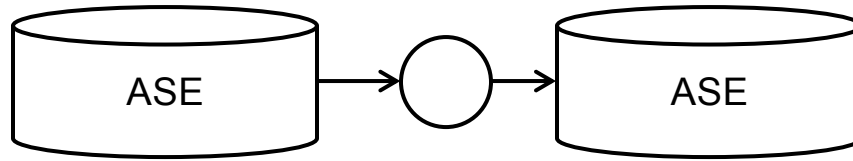
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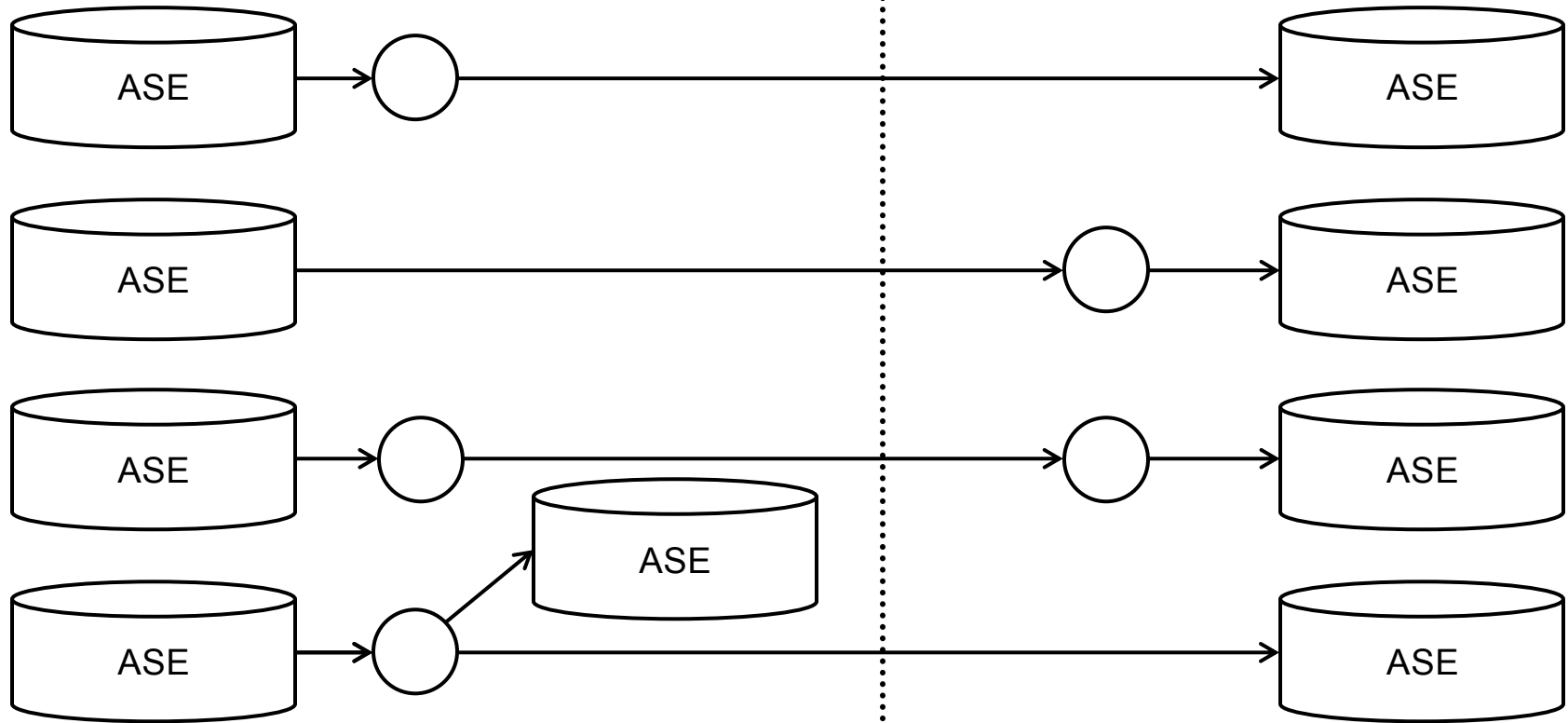
SAP ASE and IQ in SAP HANA Cloud



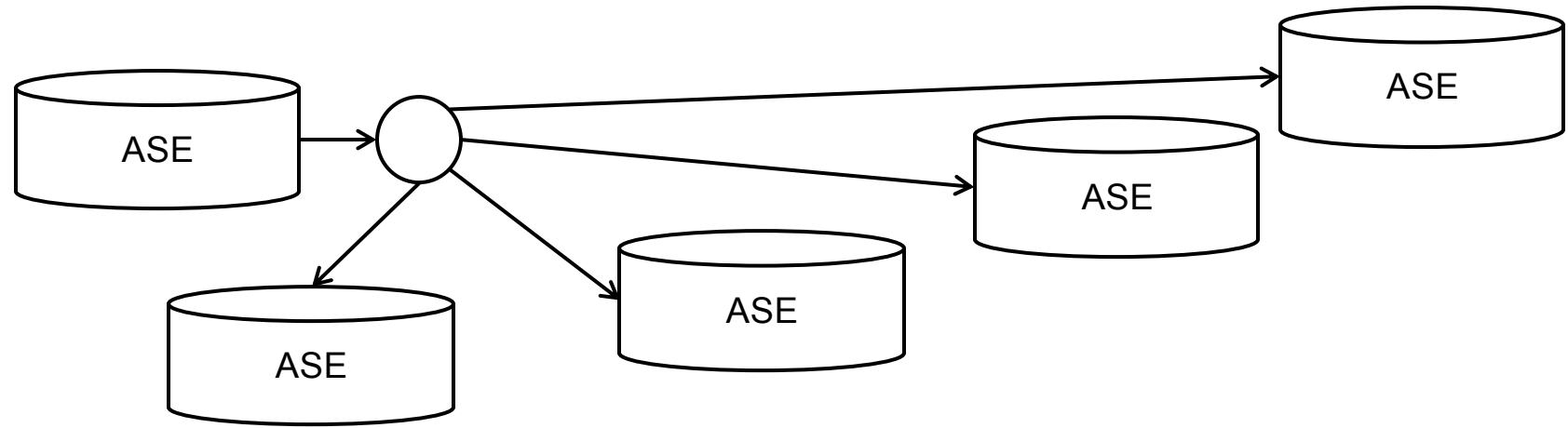
HA



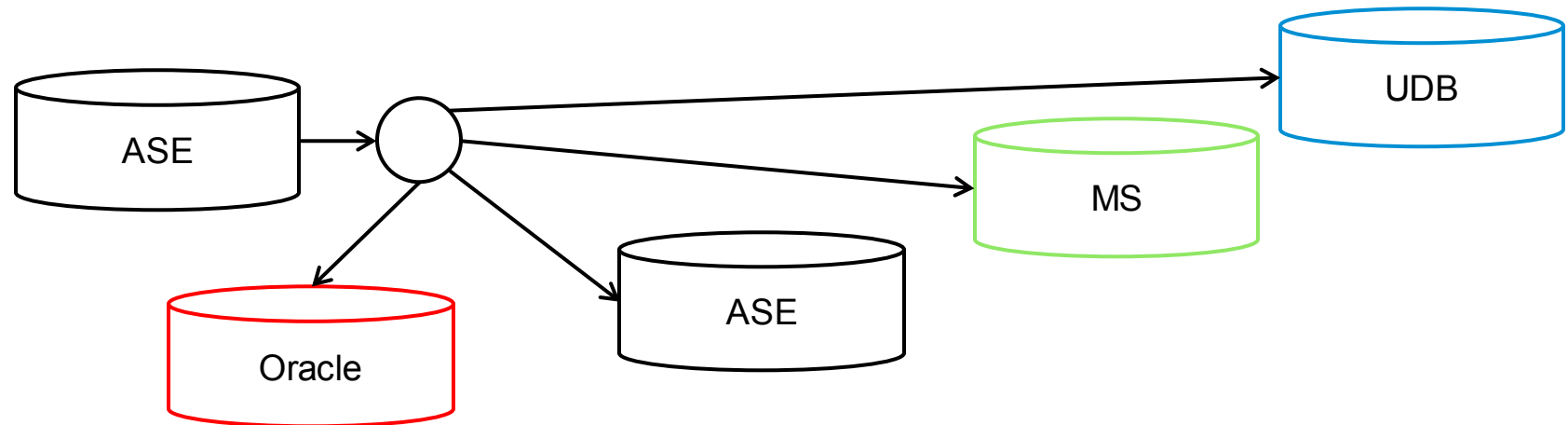
DR/MSA



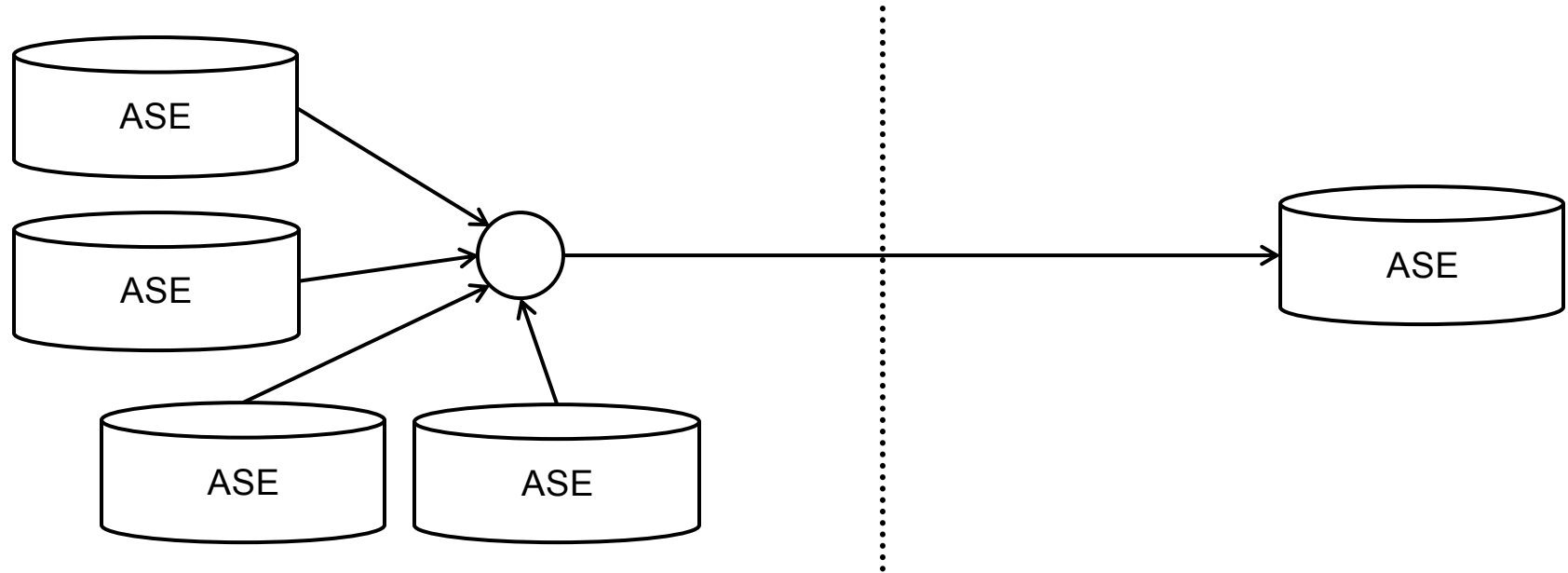
Data Movement



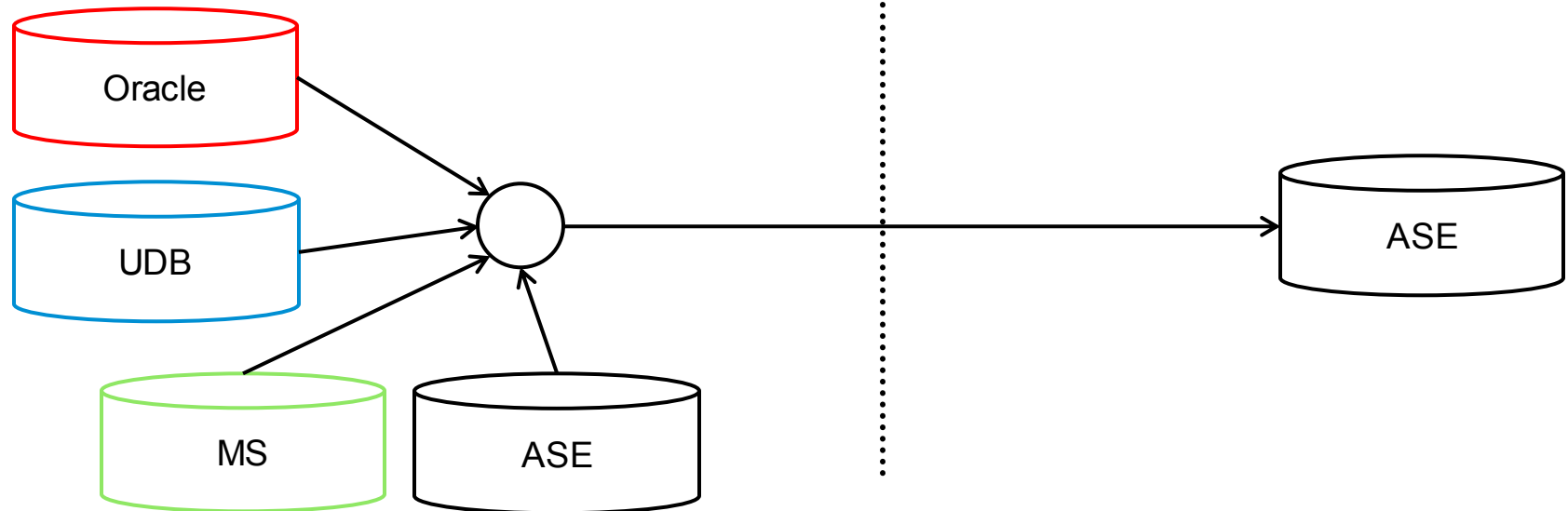
Heterogeneous Data Movement



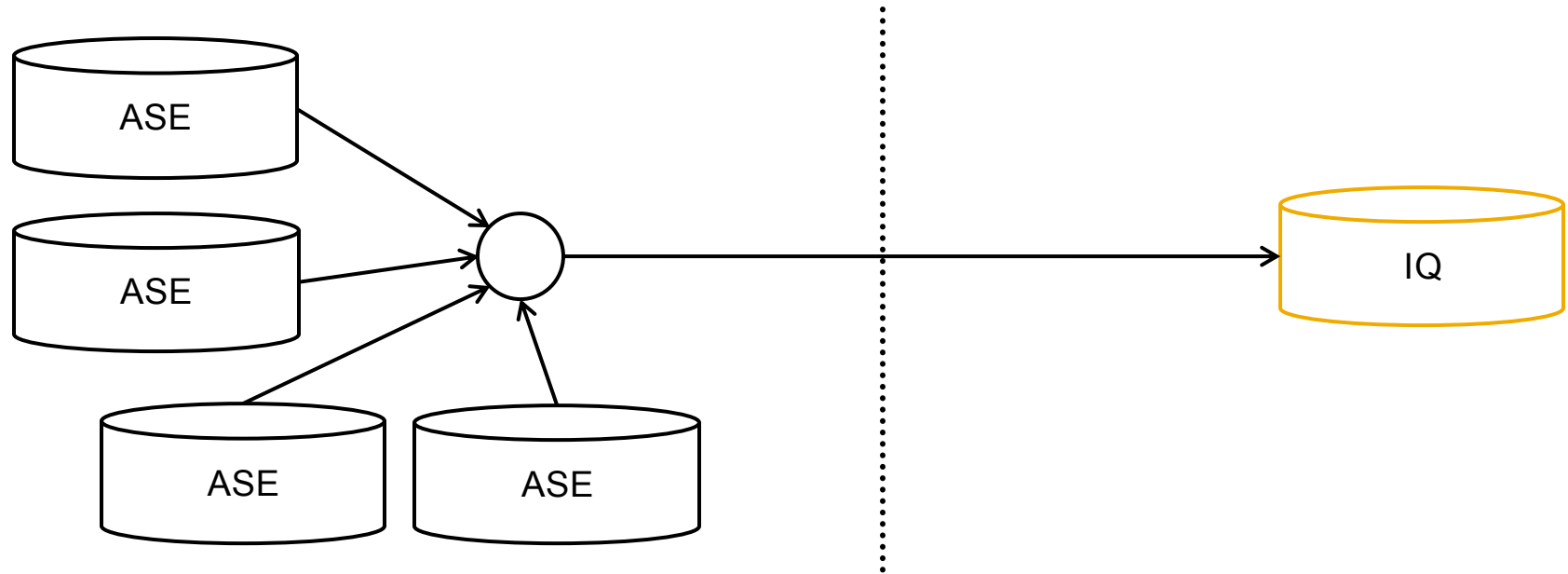
Data Consolidation



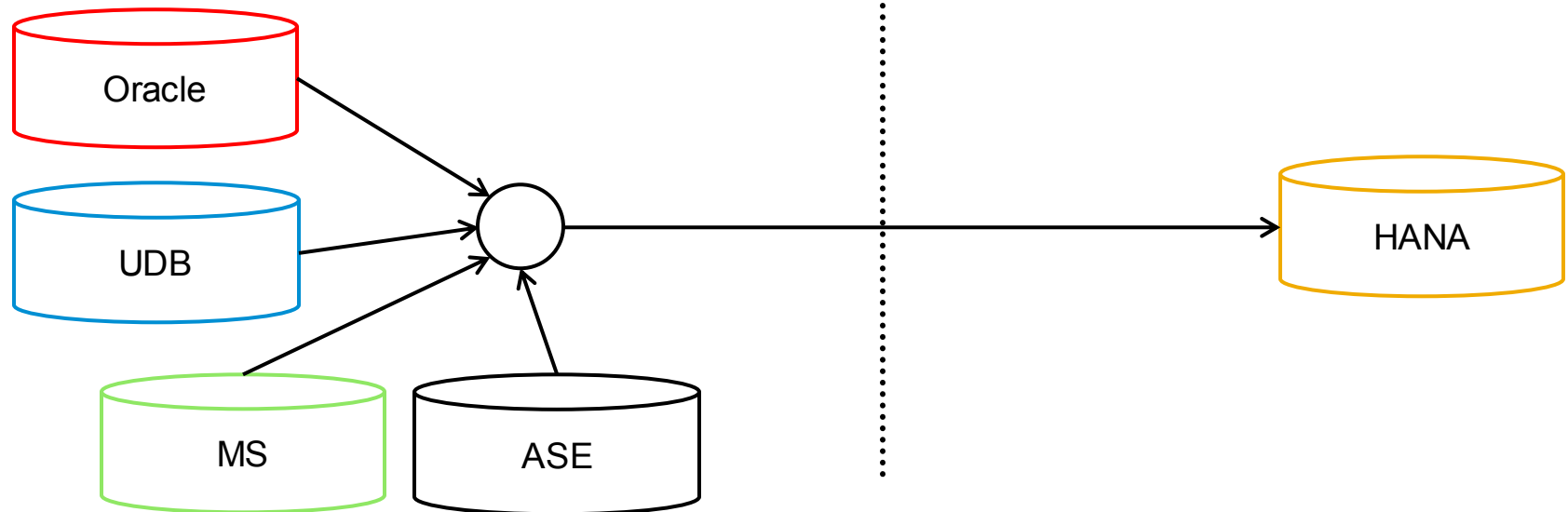
Heterogeneous Data Consolidation



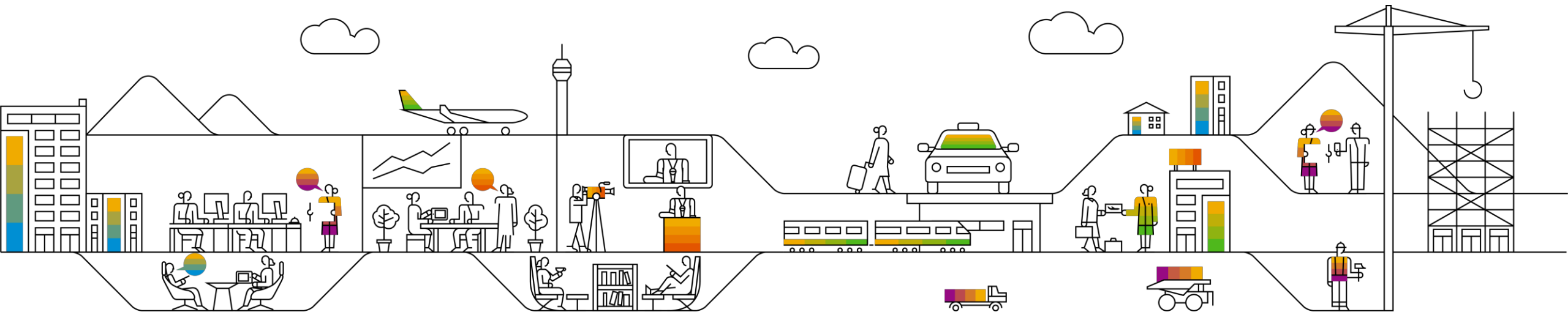
Data Consolidation to IQ



Heterogeneous Data Consolidation to HANA



SAP Replication Server



SAP Replication Server

SRS 15.7
Reduce TCO
Support SAP ERP

2012

- SAP HANA as a replication target
- SAP Business Suite on SAP ASE

2015

SRS 16 sp03:
Acceleration
HANA Compatibility

2017

- Extreme OLTP support
- Single HA and DR based on synchronous replication
- Automatic memory management

SRS 16 sp04:
Acceleration
Availability, Tuning

2020

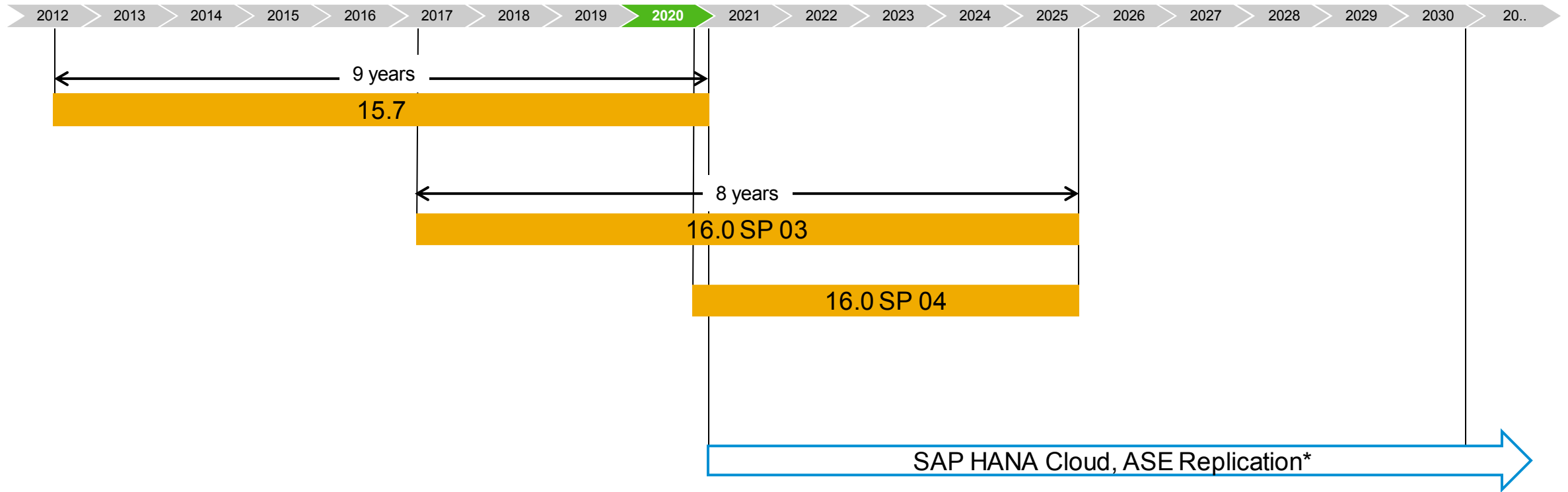
- Always-on XA Support

SAP HANA Cloud,
Adaptive Server Enterprise

2021

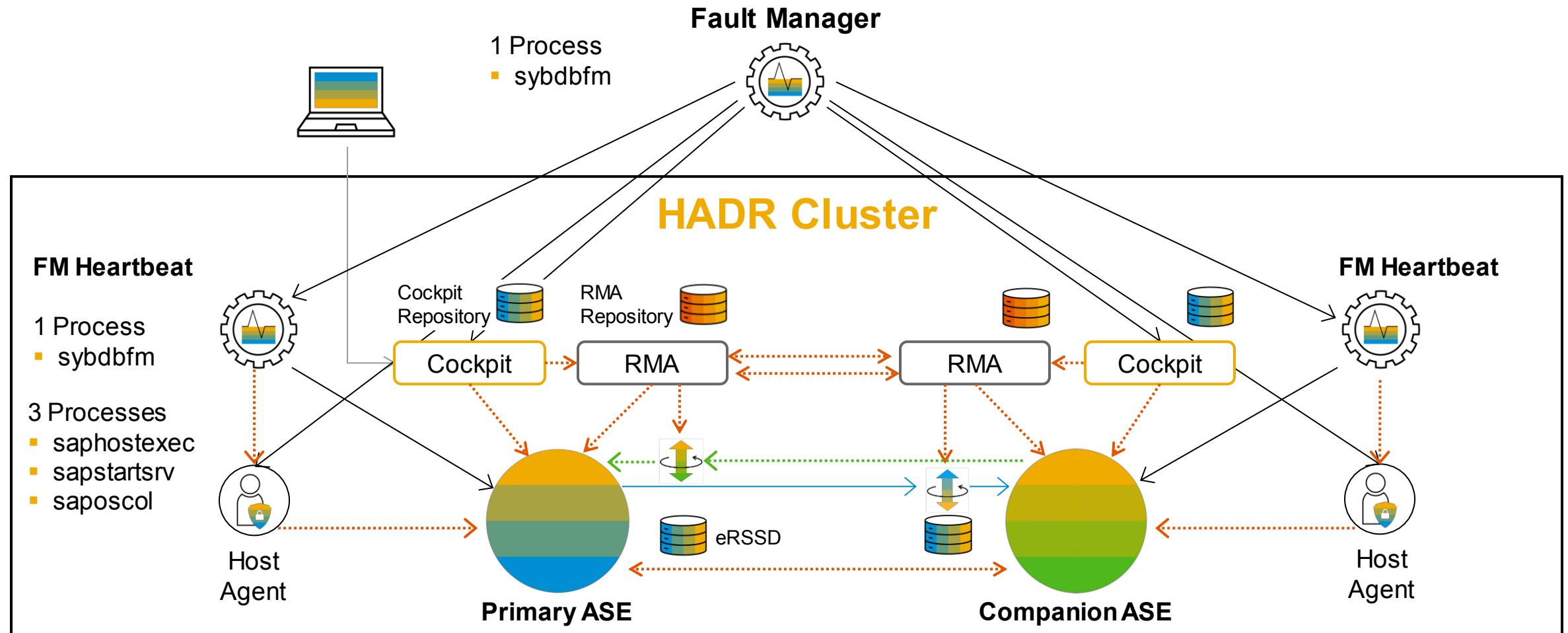
- SAP Replication Server as a managed service in SAP HANA Cloud

SAP RS Release Cycles: 2012 – 2030 and Beyond



* Current plan of record subject to change

SAP ASE and RS HADR Implementation



SAP Replication Server

Product road map overview – Key themes and capabilities

Recent innovations

SAP ASE support

- Common Crypto library (CCL) support
- TCO optimizations – memory and disk optimization for a large number of databases in target
- SAP ASE 16 SP03 compatibility in HADR
 - In-memory row store (IMRS)
 - Data row cache (DRC)
 - Multiversion concurrency control (MVCC)
- Canonical interface (CI) mode replication
 - Table-level replication
 - SQLDML support
 - Alert for simple persistent queue (SPQ) full scenarios

Core enhancements

- Enhanced management and monitoring support with replication management agent (RMA)
- Non-unique PK allowed
- RI-checking
- Japanese and Chinese localization
- Smart memory control
- increased parallelism

Current release: SAP Replication Server 16 SP03 PL08

Planned innovations¹

SAP ASE support

- SAP ASE new feature support
- SAP ASE 16 SP03 compatibility (non-HADR)
 - In-memory row store
 - Data row cache
 - Multiversion concurrency control
- CI mode replication (HADR and external replication)
 - XA failover support by HADR companion

Core enhancements

- Certification of the latest and newer versions of third-party databases with SAP ASE
- SSL certificate refresh without restarting

Product direction¹

SAP ASE support

- SAP ASE new feature support
- CI mode replication
 - CI completion, eliminate LTL completely
- HADR external replication improvements
 - FO/FB teardown issues for SPQRA
 - Log filling and truncation strategy
 - Cross-platform and endian support

Core Enhancements

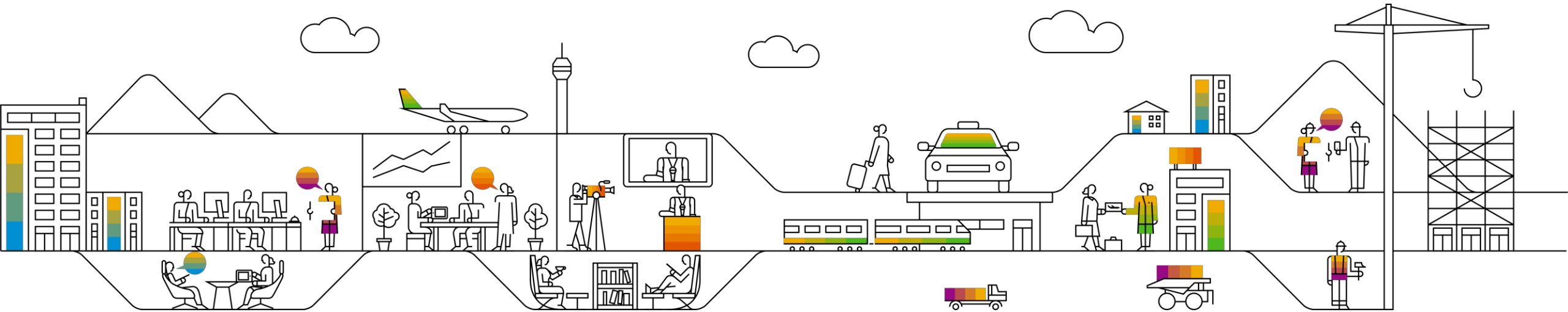
- Alternate route password encryption

Cloud

- End-to-end security (cloud)
 - Encryption for data queues

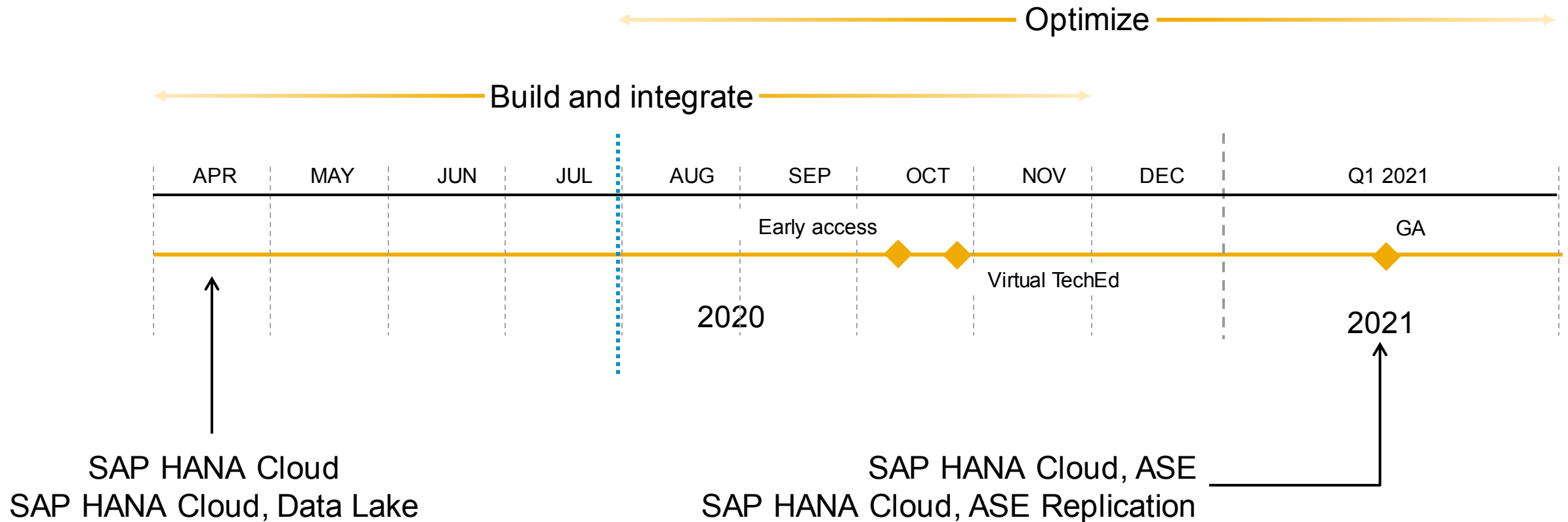
1. This is the current state of planning and may be changed by SAP at any time without notice.

SAP HANA Cloud, ASE Replication



SAP HANA Cloud, Adaptive Server Enterprise and ASE Replication

Integration, Optimization & Timeline



SAP Cloud Platform and SAP HANA Cloud

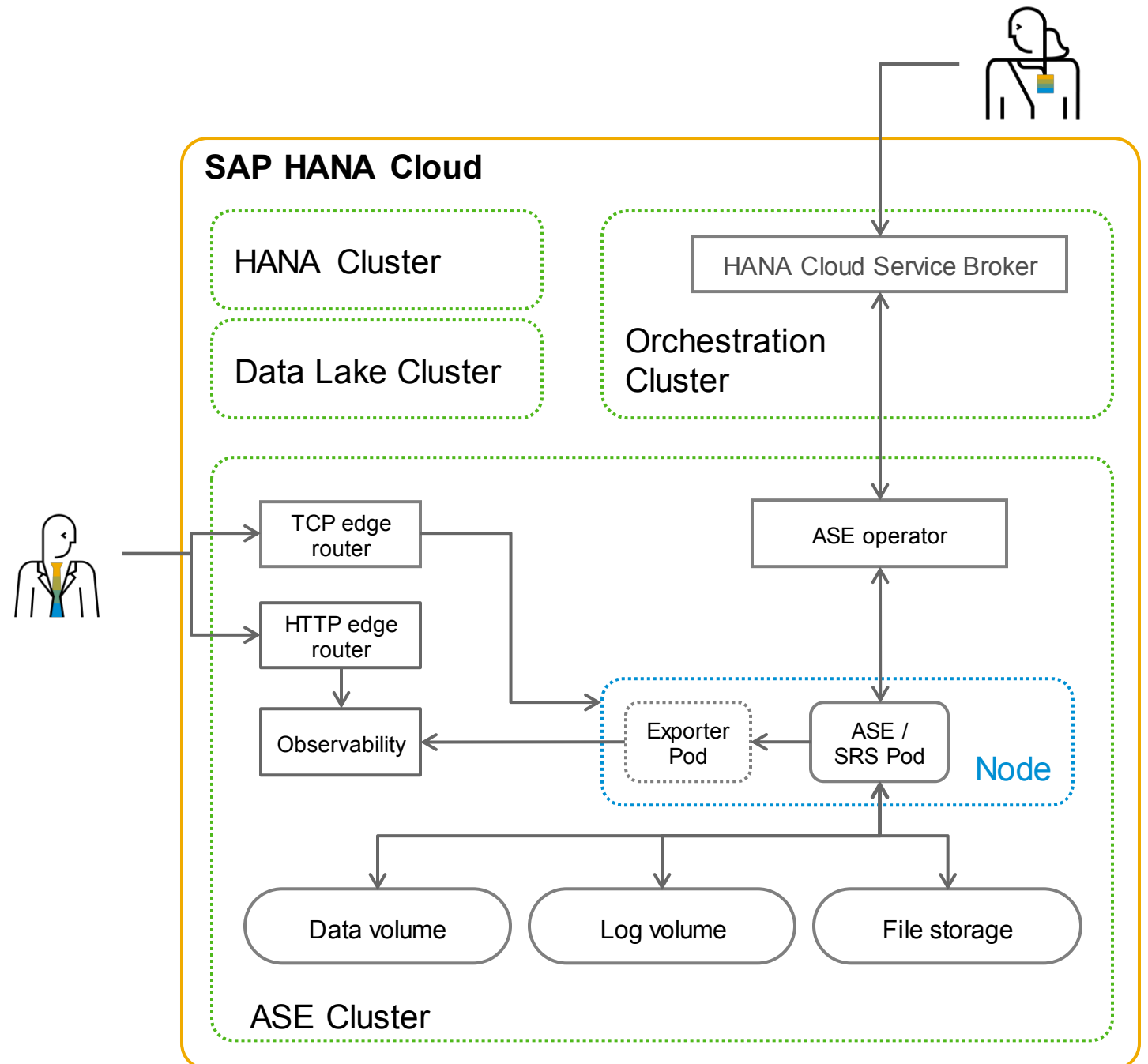
The screenshot displays the SAP Cloud Platform Cockpit interface. At the top, a breadcrumb path indicates the account hierarchy: **Global account** / **Subaccount** / **Space**. The main header shows the **SAP Cloud Platform Cockpit** title. The left sidebar contains a navigation menu with items: Applications, Service Consumption, Marketplace, Instances, Services, **SAP HANA Cloud** (highlighted), Portal, Routes, Security Groups, Events, and Members. The main content area shows the **Space: HANA-PM - SAP HANA Cloud** view, featuring a **Create Instance** button, a star icon, and a search bar. Annotations include:

- Account hierarchy** pointing to the breadcrumb path.
- SAP Cloud Platform** pointing to the main header.
- SAP HANA Cloud subscription** pointing to the highlighted **SAP HANA Cloud** item in the sidebar.
- Create an instance** pointing to the **Create Instance** button.

SAP HANA Cloud ASE Provisioning Flow

Some Kubernetes terminology

- Pod: One or more docker containers, deployed together on the same node
- Node: A virtual machine
- Host: A physical machine; one or more nodes may run on a single host.
- Cluster: one or more nodes managed by a single control plane



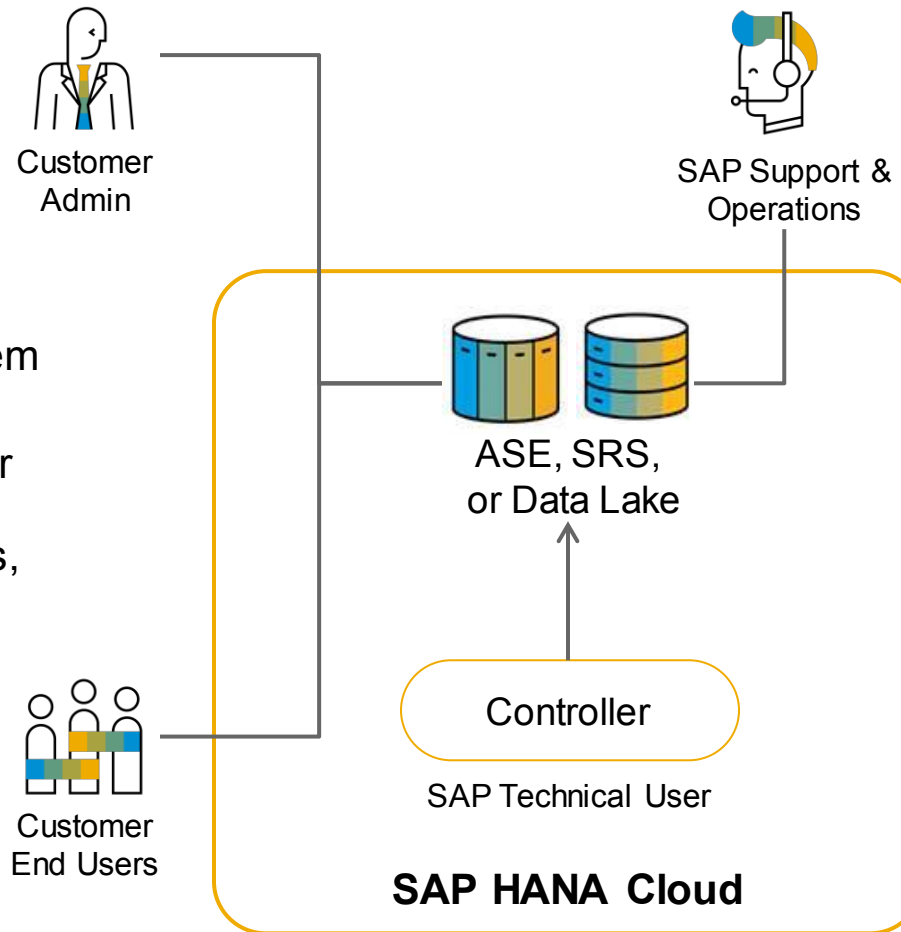
Design Principles: Separation of Powers

Customer Admin: Credentials available only to the user

- Full access to user databases
- Manage users and logical resources; configure system as needed.
- Limited visibility into server infrastructure (resource usage, file layout, versions, etc.), but no control over “physical” resource limits.

Customer End Users

- Granted by Customer Admin



SAP Support:

SAP employees for tech support or operations purposes

- View all information about system infrastructure (resource usage, file layout, etc.)
- Change limited settings (i.e. options) related to operational matters
- No access to customer schema or data

SAP Technical User:

Provisioning, scheduled tasks, etc.

- No human access
- High privileges (but limited where possible)
- No access to customer schema or data

Replication Use Cases

Replication Server can be used for many different purposes

Which of these still make sense in the cloud?

Disaster Recovery and
Warm Standby

High Availability

Data locality

Heterogeneity

Scale-out

Decision Support and
Analytics

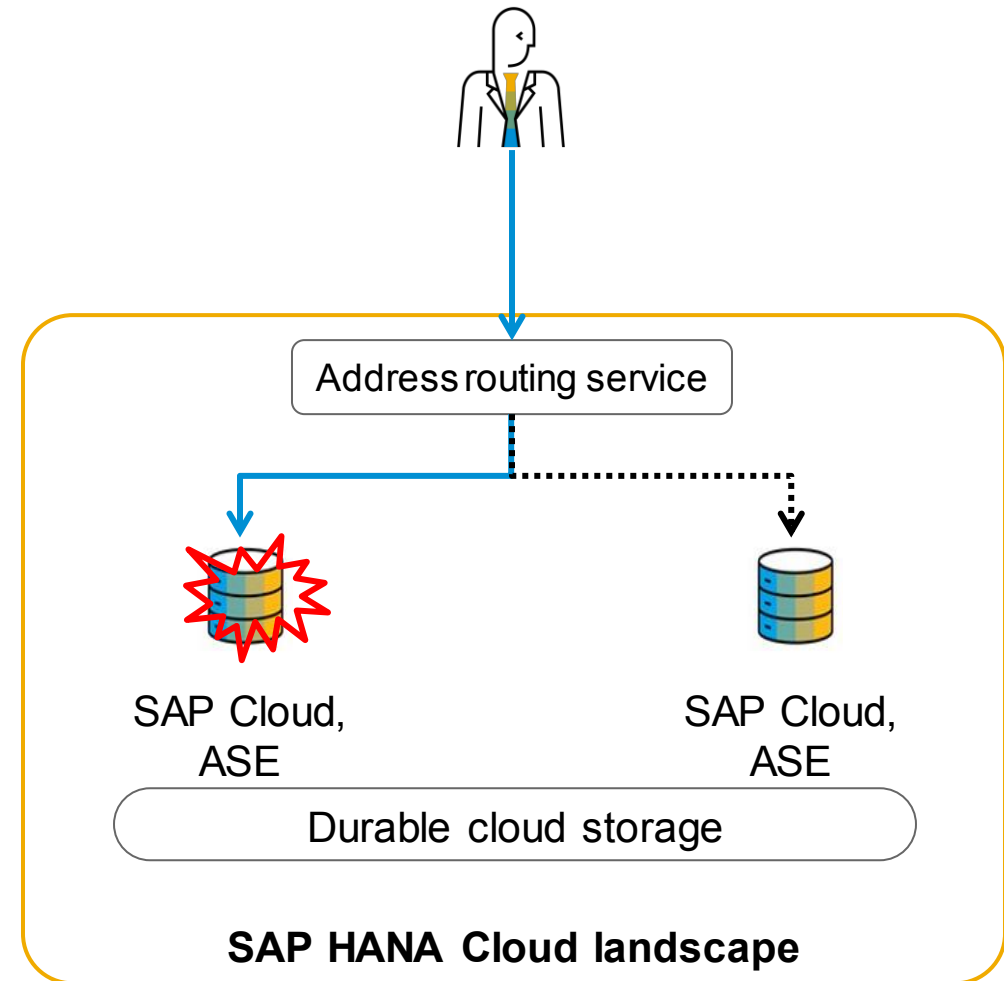
Availability within a HANA Cloud landscape

Availability within a HANA Cloud Landscape:

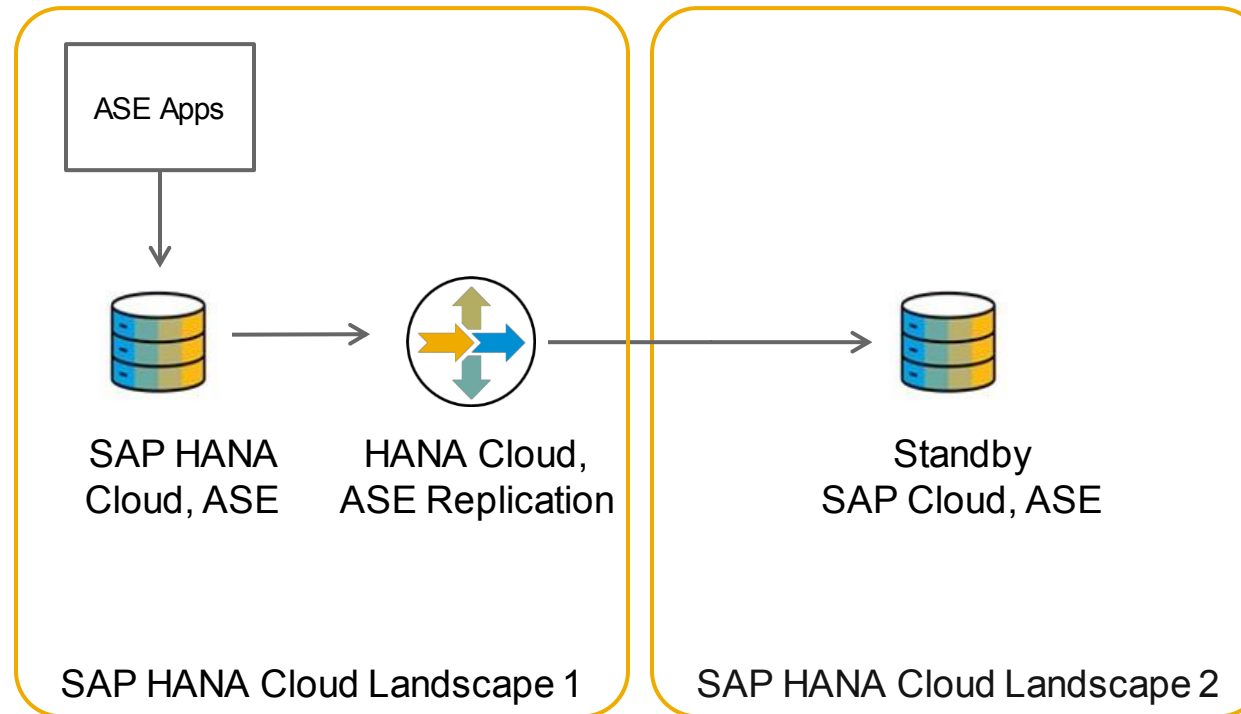
- Storage-based durability, using Kubernetes-based container management
- On crash, start new server instance

Cloud locations

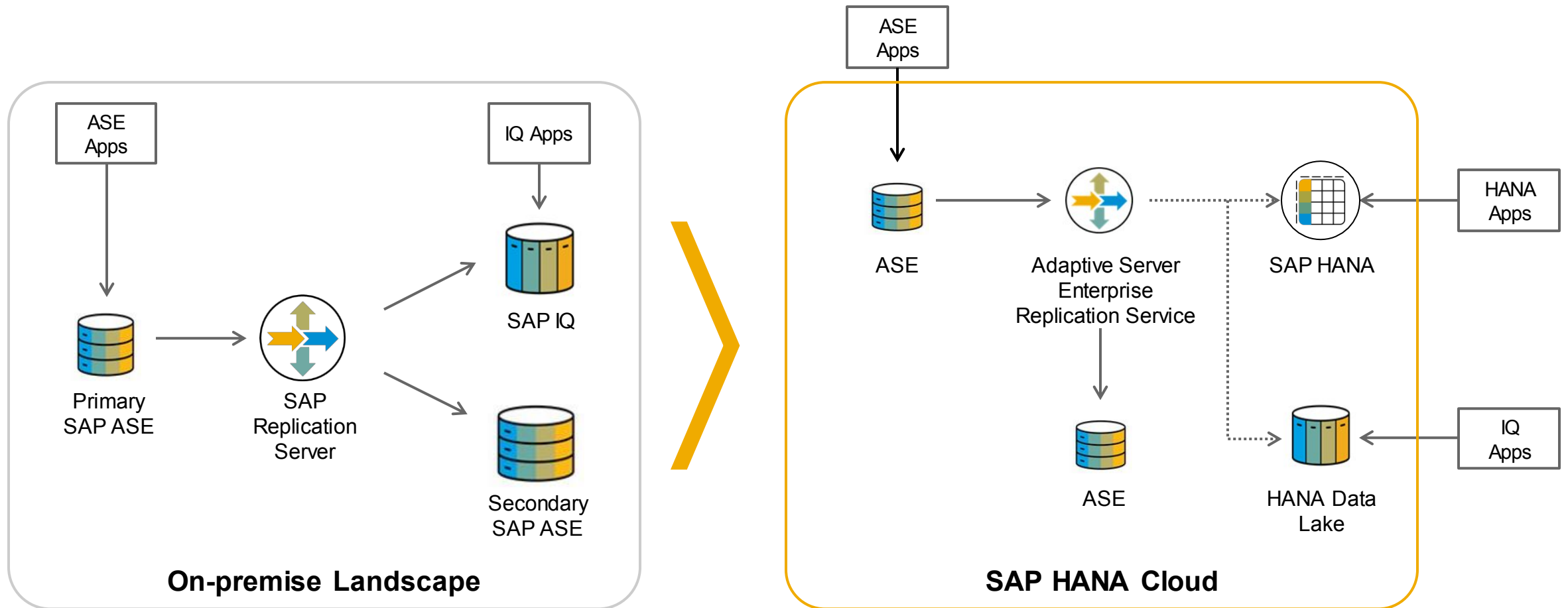
- Regions – Geographically defined boundary. One or more availability zones
- Availability zones – one or more data centers within a region, usually with latency guarantees
- Data Centers – individual building
- HANA Cloud landscapes – organizational units in HANA Cloud. A landscape will run in a cloud provider availability zone.



Use Case: Disaster Recovery and Warm Standby; Data Locality; Multi-Site Availability

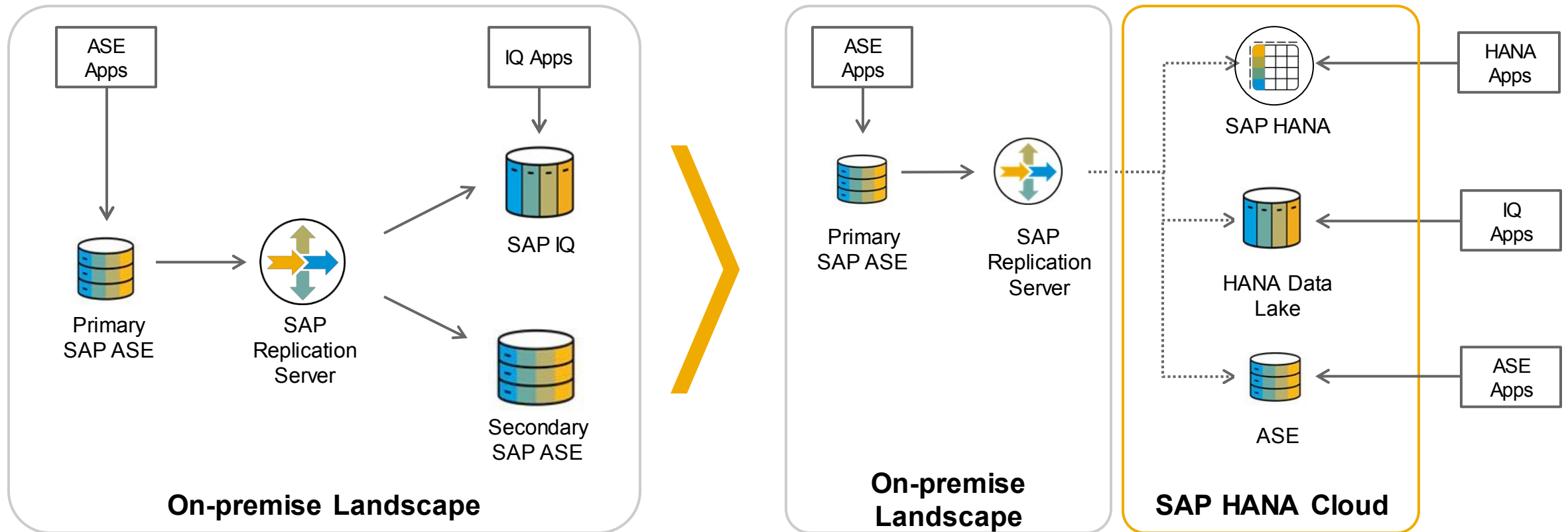


Use Case: MOVE Existing Landscapes to SAP HANA Cloud



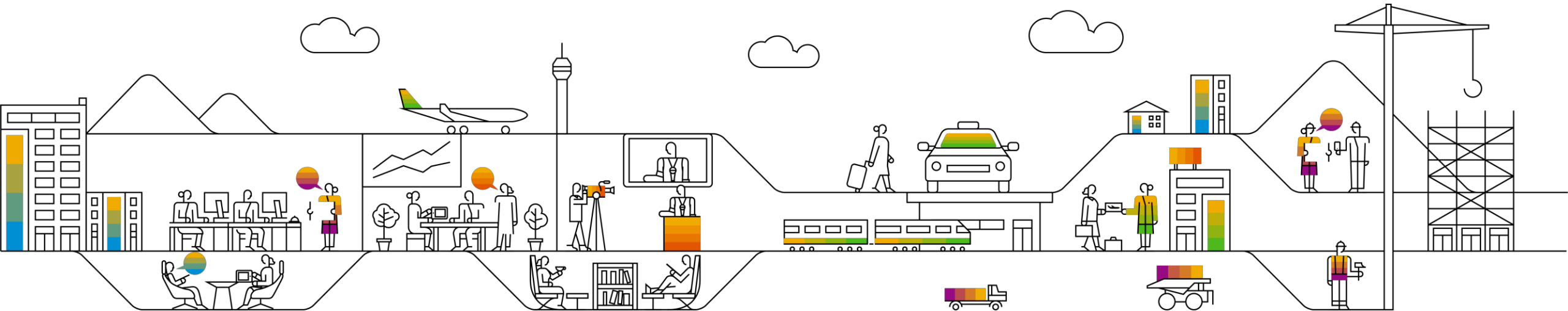
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Use Case: EXTEND Existing Landscapes to SAP HANA Cloud



This is the current state of planning, and may be changed by SAP at any time without notice.

SAP HANA Cloud, Adaptive Server Enterprise Road Map



SAP HANA CLOUD, Adaptive Server Enterprise

Preliminary Road Map Overview – Key Innovations

Q1 2021*

Operations and Security

- Self-service provisioning of ASE instances in HANA Cloud
- Software upgrade service
- Storage and compute resizing service.
- Encryption of all network traffic and stored data
- SAP-managed encryption keys
- Customer-defined audits with record of SAP actions

ASE system

- Role definitions govern customer and SAP responsibilities
- Support for all ASE 16.0 character sets and collations
- Support for all ASE 16.0 page sizes
- User ID/password authentication

Backup & Restore

- Scheduled and on-demand backups
- Database restore service
- Scheduled backups stored in an object store for a customer-selected period

Replication

- Self-service provisioning of ASE Replication instances in HANA Cloud, with a variety of compute/storage sizes, supporting replication between ASE instances in HANA Cloud

Migration

- SAP will provide guidelines describing migration practices

Cloud provider support: SAP HANA Cloud on Azure

Q2—Q4 2021*

Operations and Security

- Expand range of available instance types
- Automated maintenance operations
- Customer-managed encryption keys
- Customers can specify periods for password rotation and encryption key rotation

ASE system

- Support for > 4TB RAM
- Support for > 32K connections
- Job scheduler
- Single Sign-On authentication

Backup & Restore

- Archival storage of backups and logs

Replication

- Scalable multiple database replication
- Replication in HANA Cloud to SAP HANA and HANA Data Lake, for analytics on ASE workloads
- Replication from ASE on-premise instances to HANA Cloud ASE instances
- “Always On” HA & DR for ASE
- Data Assurance service

Cloud provider support: SAP HANA Cloud on AWS

2022 —*

Operations

- Additional optimizations and automation

ASE system

- Advanced automation
- Performance optimizations

Cloud provider support

- SAP HANA Cloud on Google Cloud Platform

Public version at roadmaps.sap.com: [SAP HANA Cloud](#) [SAP HANA Cloud | ASE](#) [SAP HANA Cloud | ASE Replication](#)

SAP Road Map Explorer

roadmaps.sap.com

The screenshot displays the SAP Road Map Explorer web application. The browser address bar shows the URL: `roadmaps.sap.com/board?PRODUCT=73554900100800002881&range=CURRENT-LAST#Q2%202020`. The application header includes the SAP logo, the title "Road Map Explorer", and navigation tabs for "Products", "Processes", "Industries", and "My Road Maps". A search bar at the top contains the text "SAP HANA Cloud" and shows "47 Innovations". Below the header, there are filters for "Products" (1) and "Industries", a "Current - Last" date range selector, and a "Save" button. The main content area is divided into four columns representing different time periods: "Q2 2020" (29 Innovations), "Q3 2020" (11 Innovations), "Q4 2020" (5 Innovations), and "Q1 2021" (2 Innovations). The "Q1 2021" column is highlighted with a yellow border. It features a "Future Release" tag and a category "Databases". Under "Databases", there are two items: "Data replication for online transaction processing databases i..." and "Provision of new extreme OLTP database options". The latter item is marked with a star and includes a list of bullet points detailing new capabilities and services.

SAP HANA Cloud x 47 Innovations

Products 1 Industries

Current - Last Save

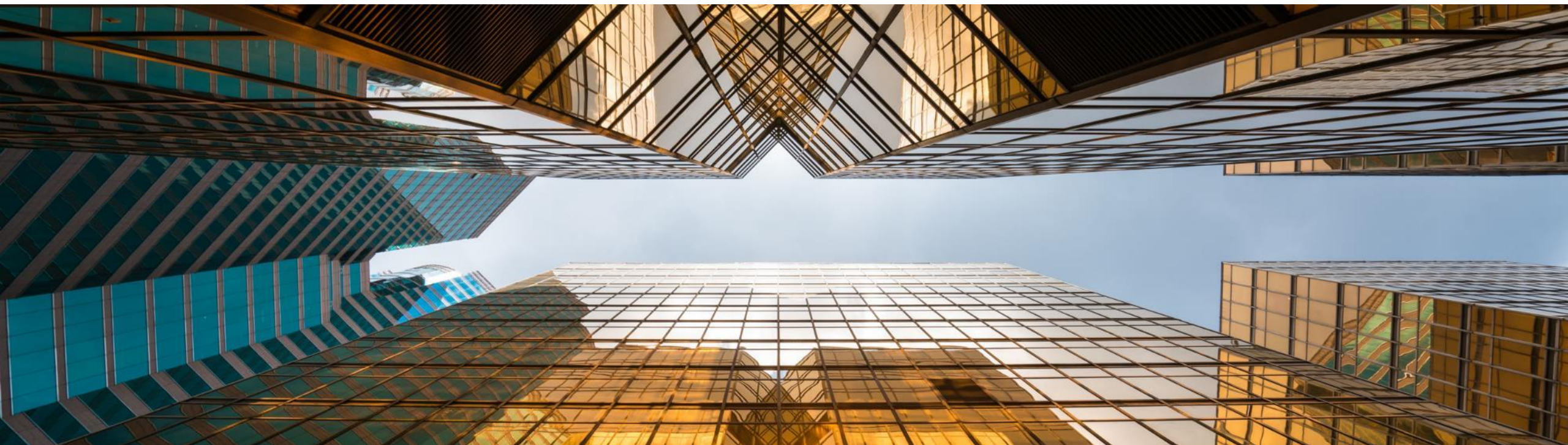
Q1 2021 2 Innovations

Future Release

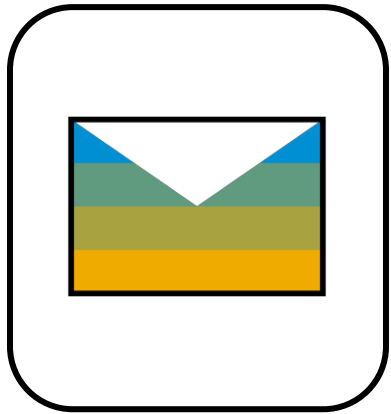
Databases

- Data replication for online transaction processing databases i...
- Provision of new extreme OLTP database options
 - Access to managed OLTP databases in the cloud:
 - Self-service provisioning of SAP Adaptive Server Enterprise database instances in SAP HANA Cloud, with a variety of compute and storage sizes
 - Guidelines for efficient migration procedures and practices
 - Cloud operations and security provisions:
 - Software upgrade service
 - Storage and compute resizing service
 - Encryption of all network traffic and stored data
 - SAP-managed encryption keys
 - Customer-defined audits with record of SAP actions
 - SAP Adaptive Server Enterprise system:
 - Role definitions that govern customer and SAP

Suggested Next Steps



Getting Started



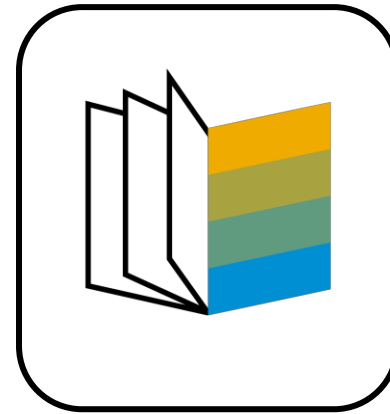
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cloud strategy



Assess your
application
landscape



Assess upgrade
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(Wednesday, May 13, 2020, 08:00 AM PDT)
- Future Roadmap for SAP HANA Cloud, Adaptive Server Enterprise
→ **Available On Demand**
- Future Roadmap for SAP HANA Cloud, Data Lake
→ **Available On Demand**



Thank you.