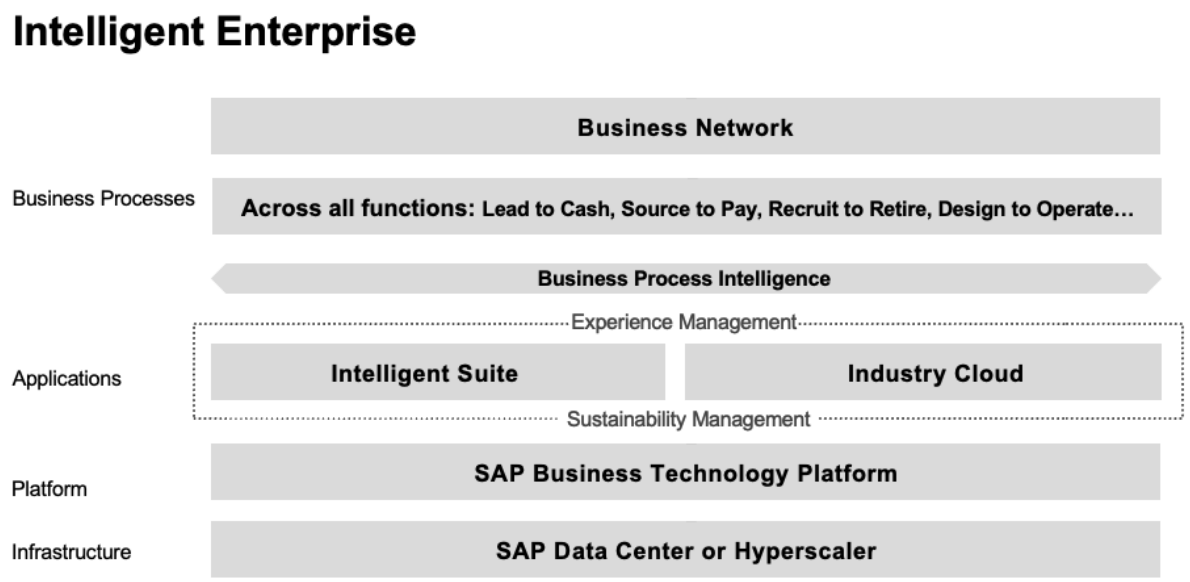
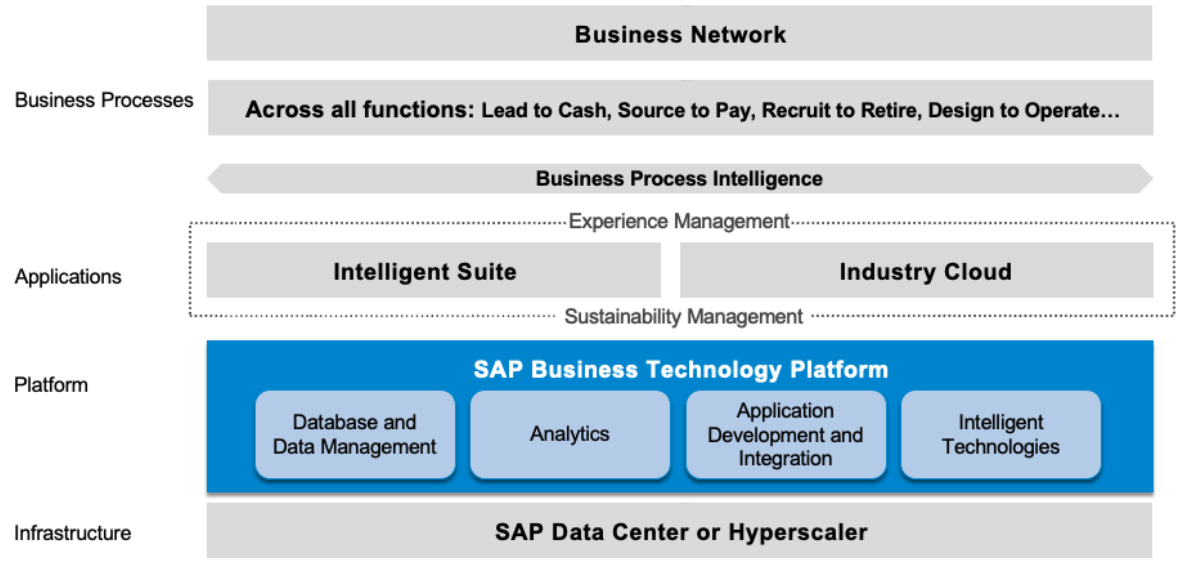
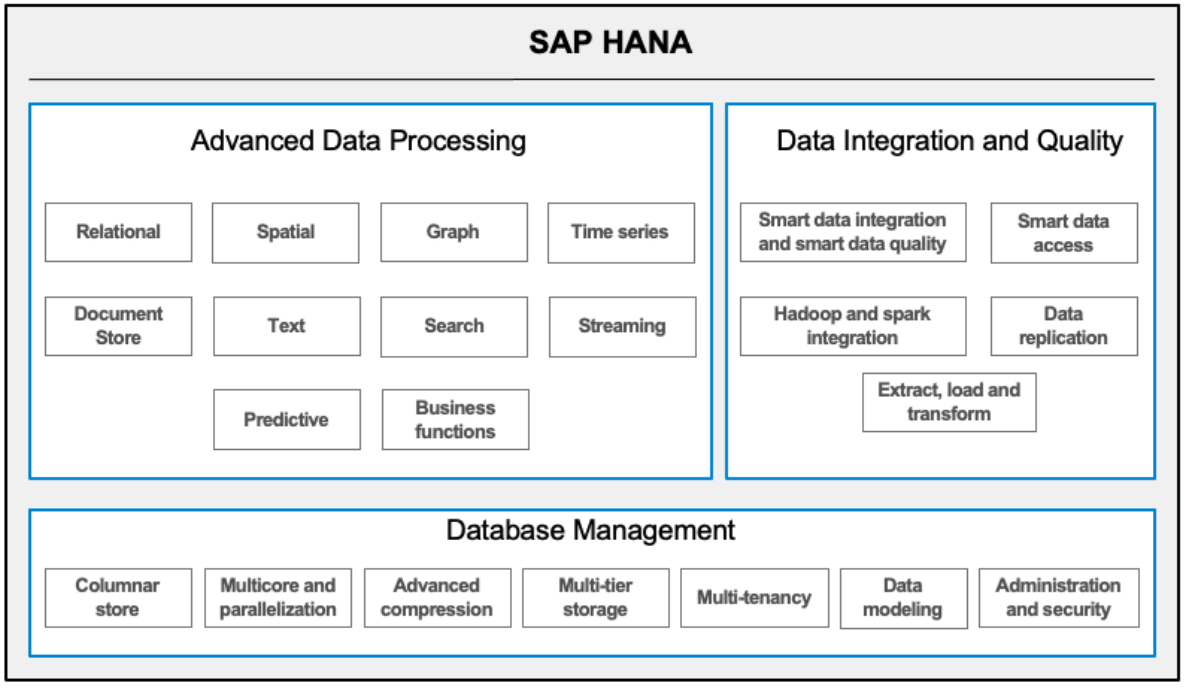
Chapter 1: The Intelligent Enterprise

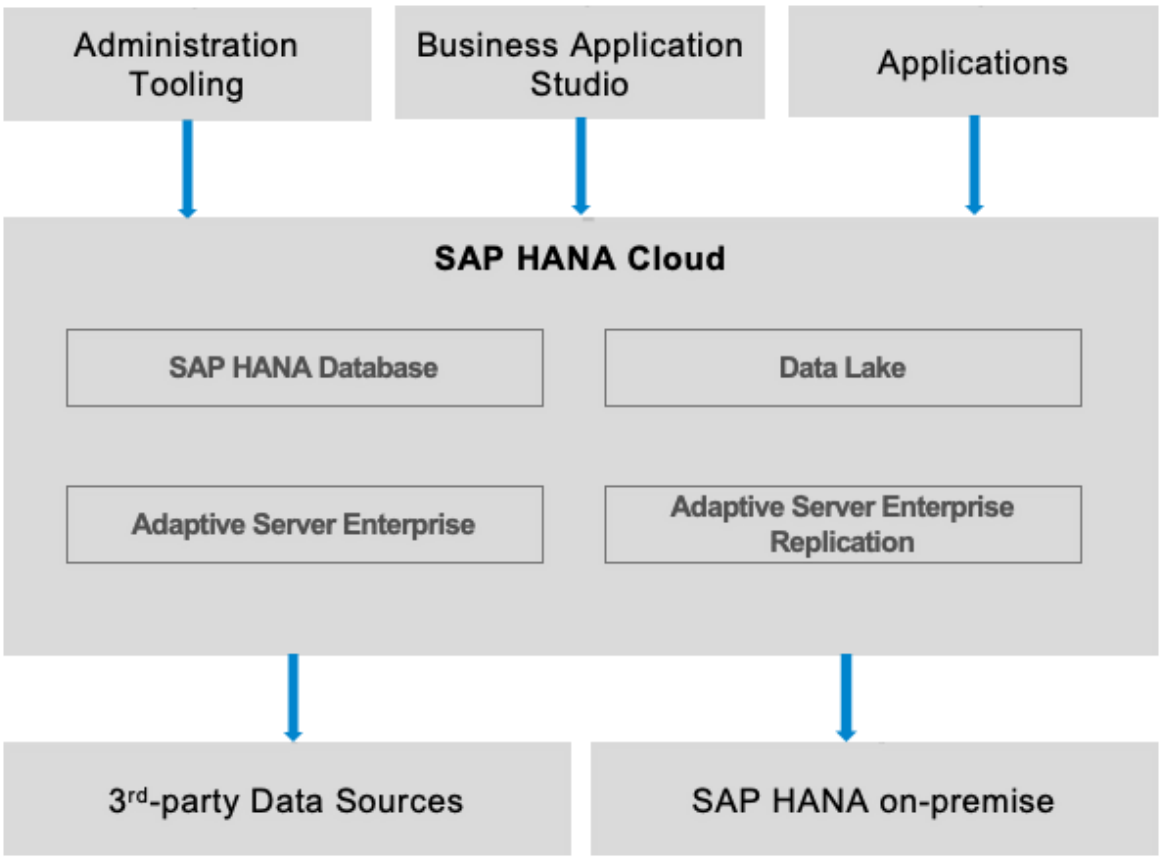


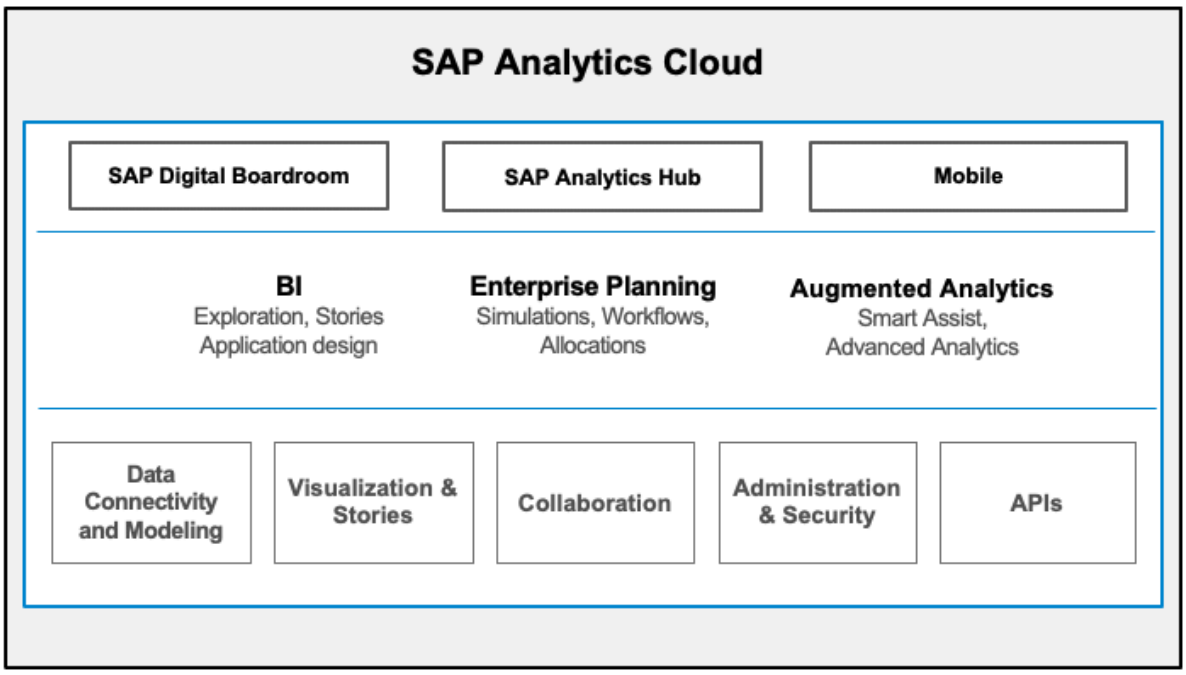
Chapter 2: SAP Business Technology Platform Overview

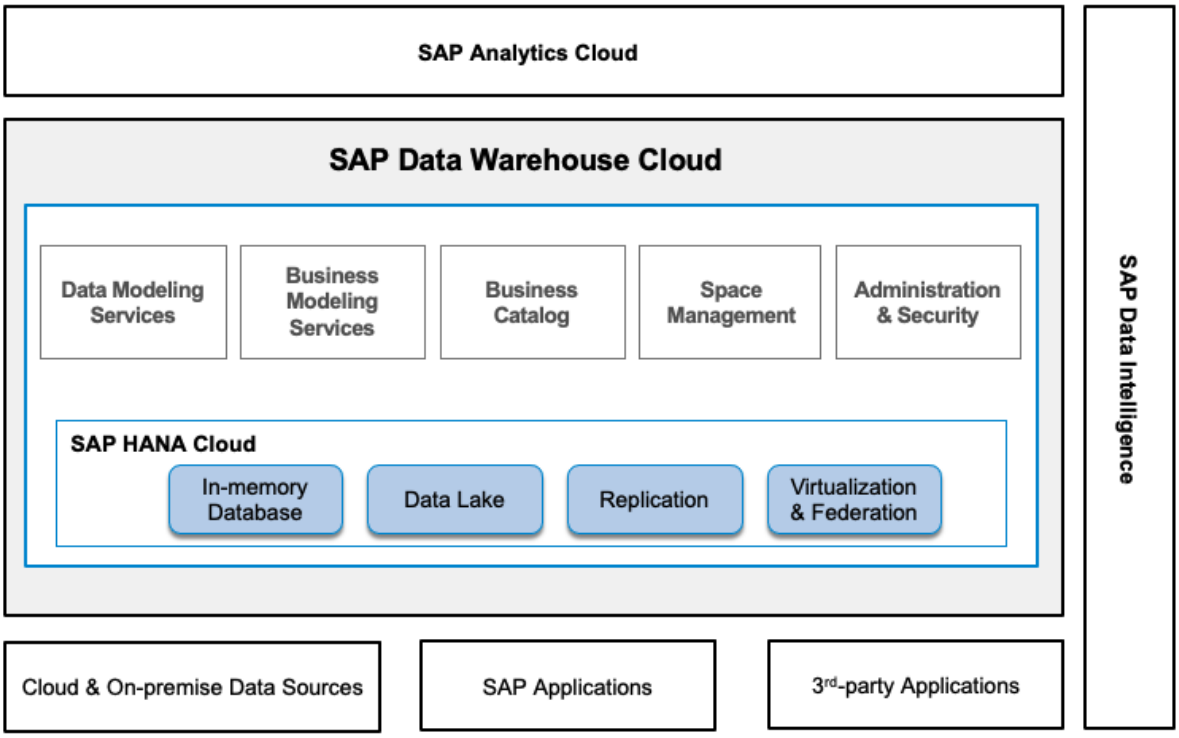
SAP BTP as the Platform for Intelligent Enterprise

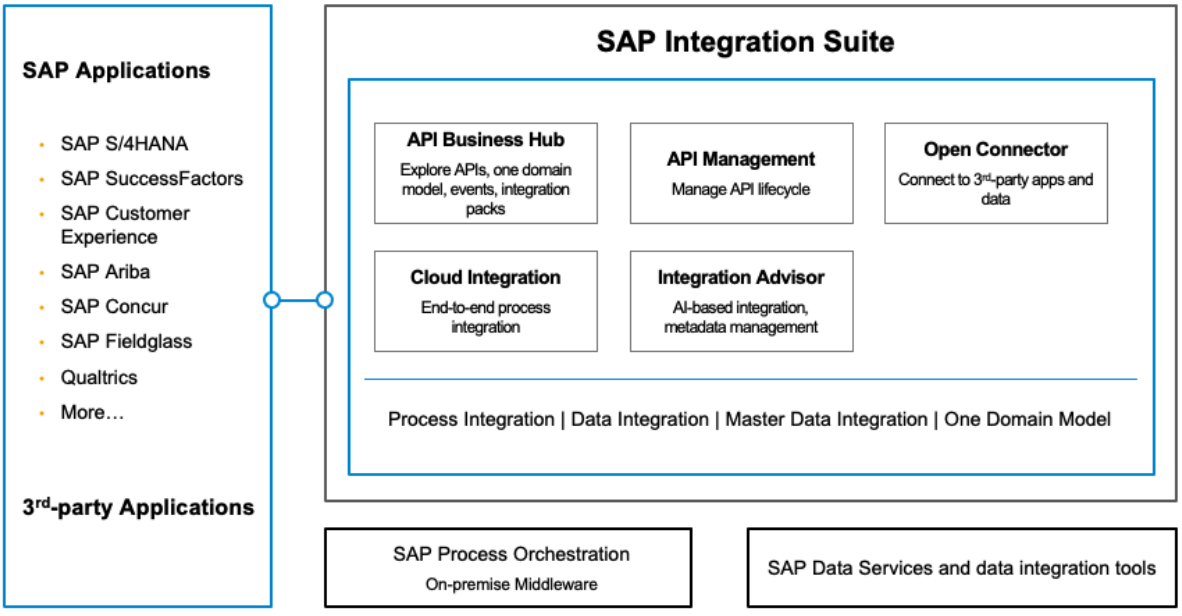


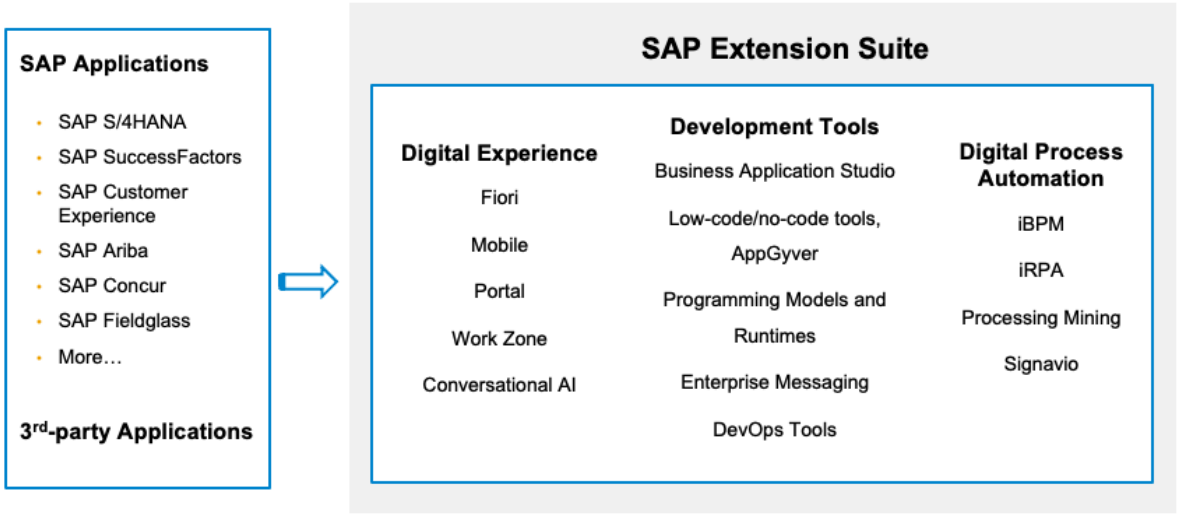


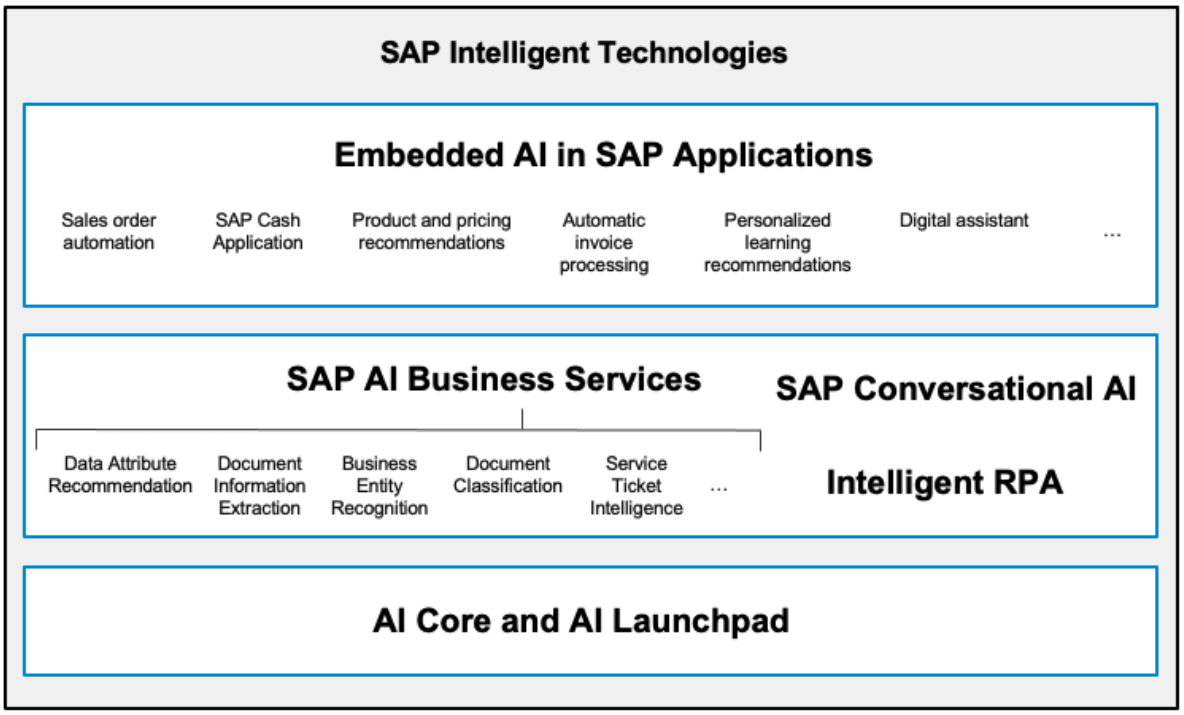

Administration Tooling
Business Application Studio
Applications
SAP HANA Cloud
SAP HANA Database
Data Lake
Adaptive Server Enterprise
Adaptive Server Enterprise Replication
3rd-party Data Sources
SAP HANA on-premise


SAP Analytics Cloud
SAP Digital Boardroom
SAP Analytics Hub
Mobile
BI
Exploration, Stories
Application design
Enterprise Planning
Simulations, Workflows,
Allocations
Augmented Analytics
Smart Assist,
Advanced Analytics
Data Connectivity and Modeling
Visualization & Stories
Collaboration
Administration & Security
APIs

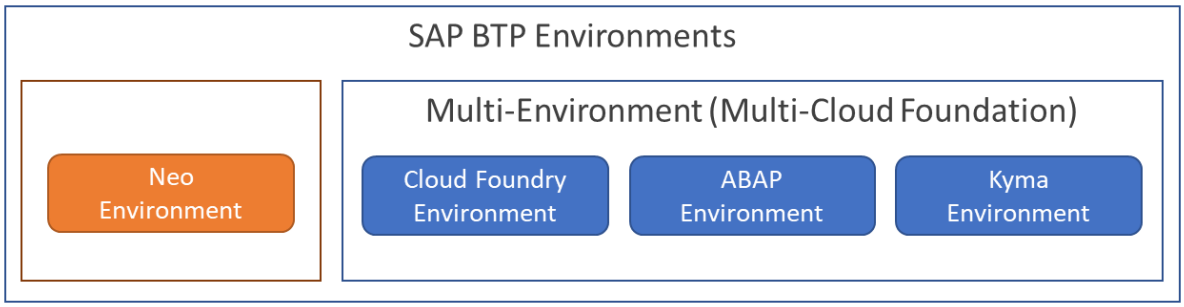

SAP Analytics Cloud
SAP Data Warehouse Cloud
Data Modeling Services
Business Modeling Services
Business Catalog
Space Management
Administration & Security
SAP HANA Cloud
In-memory Database
Data Lake
Replication
Virtualization & Federation
SAP Data Intelligence
Cloud & On-premise Data Sources
SAP Applications
3rd-party Applications

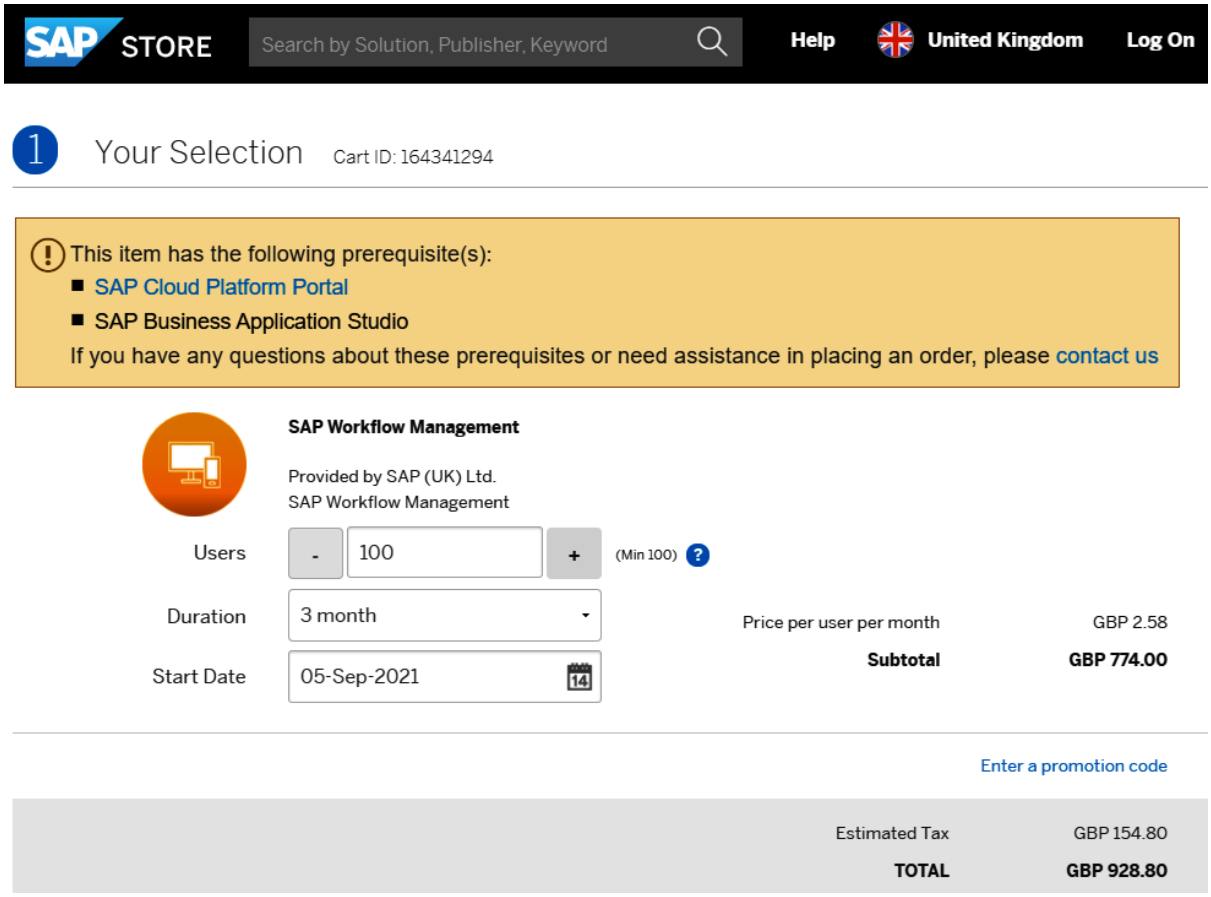

SAP Applications
SAP S/4HANA
SAP SuccessFactors
SAP Customer Experience
SAP Ariba
SAP Concur
SAP Fieldglass
Qualtrics
More…
3rd-party Applications
SAP Integration Suite
API Business Hub
Explore APIs, one domain model, events, integration packs
API Management
Manage API lifecycle
Open Connector
Connect to 3rd-party apps and data
Cloud Integration
End-to-end process integration
Integration Advisor
AI-based integration, metadata management
Process Integration | Data Integration | Master Data Integration | One Domain Model
SAP Process Orchestration
On-premise Middleware
SAP Data Services and data integration tools


SAP Applications
SAP S/4HANA
SAP SuccessFactors
SAP Customer Experience
SAP Ariba
SAP Concur
SAP Fieldglass
More…
3rd-party Applications
SAP Extension Suite
Digital Experience
Fiori
Mobile
Portal
Work Zone
Conversational AI
Development Tools
Business Application Studio
Low-code/no-code tools, AppGyver
Programming Models and Runtimes
Enterprise Messaging
DevOps Tools
Digital Process Automation
iBPM
iRPA
Processing Mining
Signavio


SAP Intelligent Technologies
Embedded AI in SAP Applications
Sales order automation
SAP Cash Application
Product and pricing recommendations
Automatic invoice processing
Personalized learning recommendations
Digital assistant
…
SAP AI Business Services
Data Attribute Recommendation
Document Information Extraction
Business Entity Recognition
Document Classification
Service Ticket Intelligence
…
SAP Conversational AI
Intelligent RPA
AI Core and AI Launchpad

Chapter 3: Establishing a Foundation for SAP Business Technology Platform





Global Account: 00 trial - Usage Analytics

Export

Service Usage

Environment: Multi Enviro...

Service: Integration Suite

Directory/Subaccount: 0 trial (All)

Space:

Period: Current Month

Service Plan	Subaccounts	Available Regions	Usage in Current Month
Integration Suite - Messages	1	cf-eu10	1 message
	1	cf-eu10	1 message
Integration Suite - Trial	1	cf-eu10	1 tenant

Monthly Usage

Usage for the selected service plan

Directory/Subaccount Usage

Directory/Subaccount: 00 trial (All)

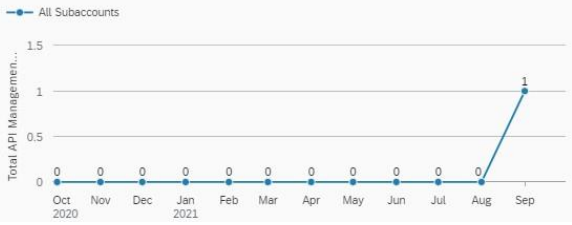
Space:

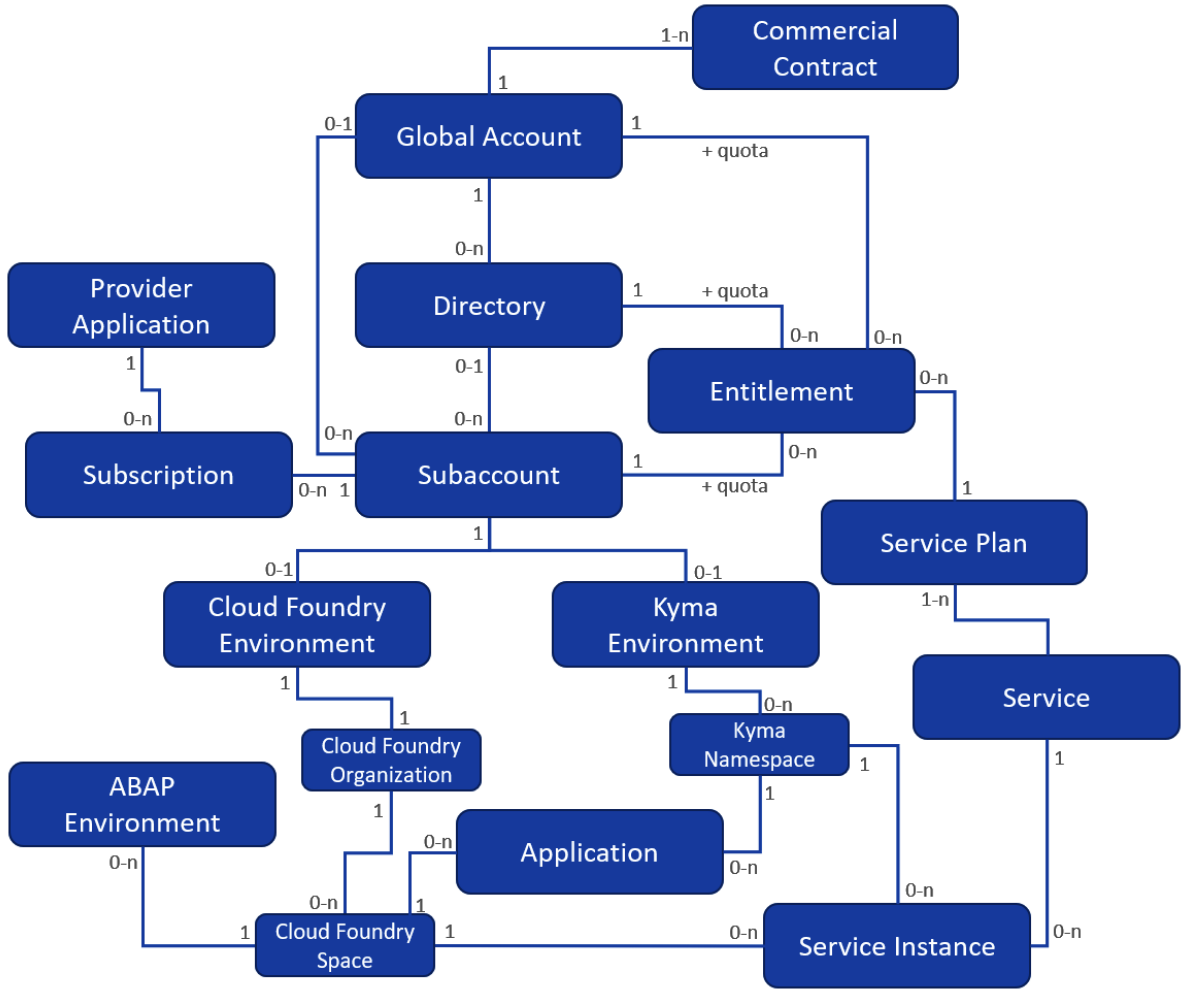
Period: Last 12 Months

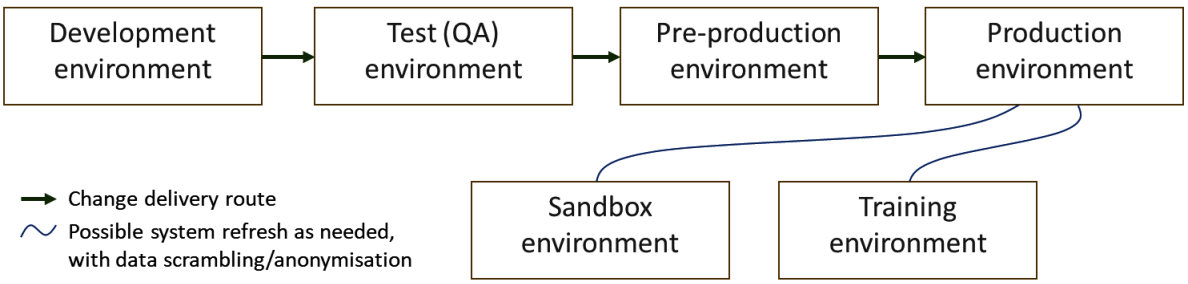
Service Plan	Subaccounts	Usage in Current Month
Integration Suite - Messages	1	1 message
	1	1 message
Integration Suite - Trial	1	1 tenant
Kyma Runtime - Standard	1	169.0 capacity units
Launchpad Service - Standard	1	1 user
	1	1 user

Monthly Usage

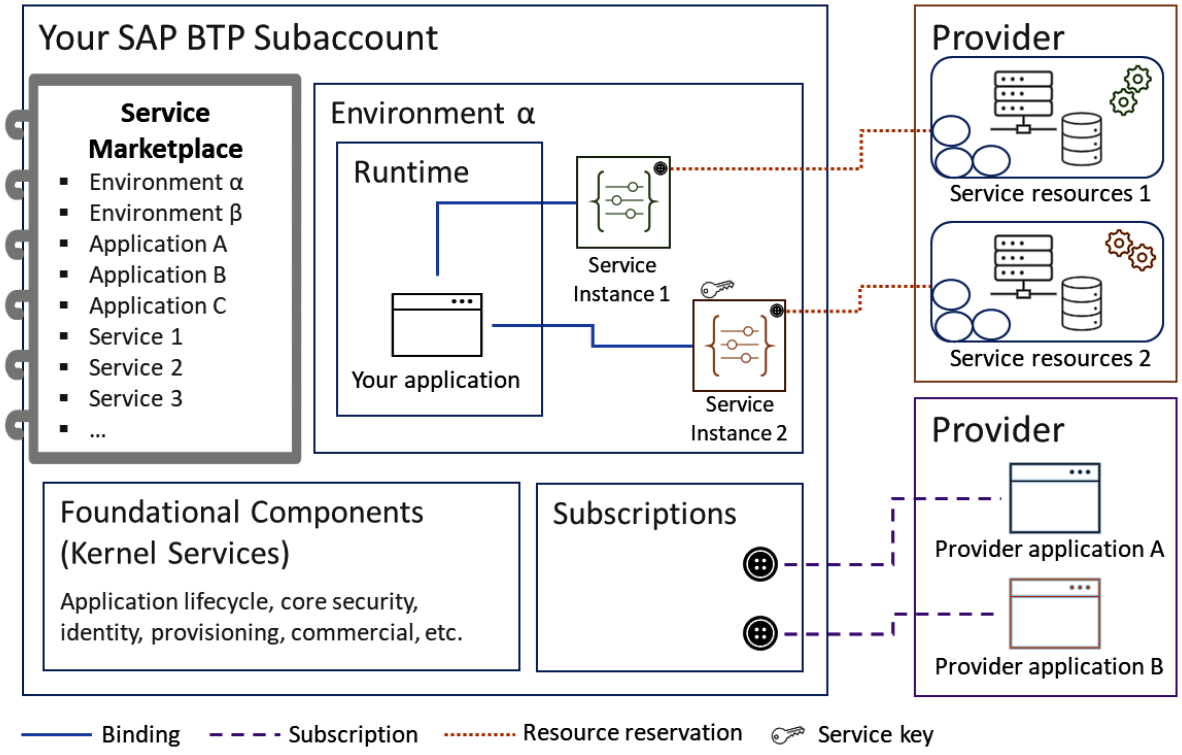
Usage for the selected service plan




Commercial Contract
1-n
1
Global Account
0-1
1
+ quota
1
0-n
Provider Application
Directory
1
+ quota
0-n
0-n
1
0-1
Entitlement
0-n
Subscription
0-n
Subaccount
0-n
0-n
0-n
1
+ quota
0-n
1
Service Plan
1
0-1
0-1
1-n
Cloud Foundry Environment
Kyma Environment
Service
1
1
1
0-n
Cloud Foundry Organization
Kyma Namespace
1
ABAP Environment
1
1
0-n
0-n
Application
0-n
0-n
0-n
1
1
Cloud Foundry Space
1
0-n
Service Instance
0-n


Development environment
Test (QA) environment
Pre-production environment
Production environment
Sandbox environment
Training environment
Change delivery route
Possible system refresh as needed, with data scrambling/anonymisation

Business Unit 1 Region A Multi-Environment	Development	Test	Pre-production	Production	Training	Sandbox
Business Unit 1 Region B Multi-Environment			Pre-production	Production		
Business Unit 1 Region A Multi-Environment Product X	Development	Test	Pre-production	Production		
Business Unit 2 Region A Neo Environment	Development	Test	Pre-production	Production		
Business Unit 2 Region A Multi-Environment	Development	Test	Pre-production	Production	Training	

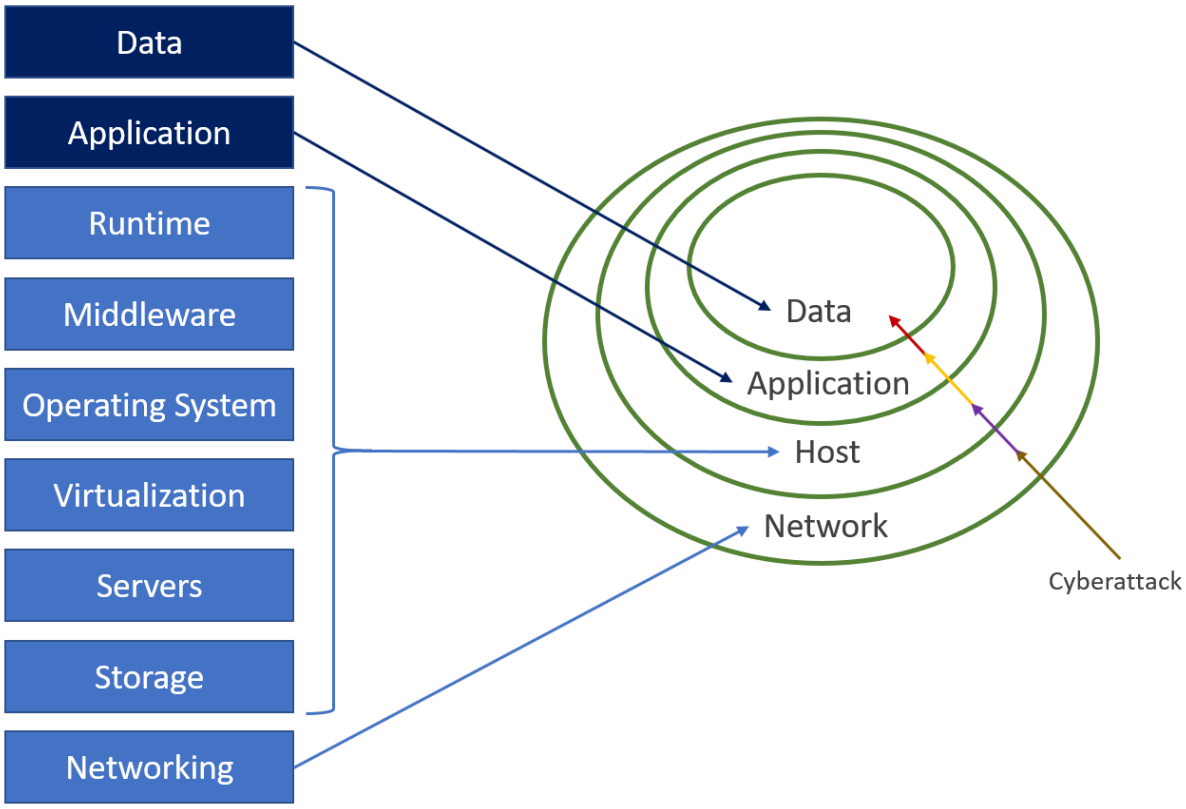


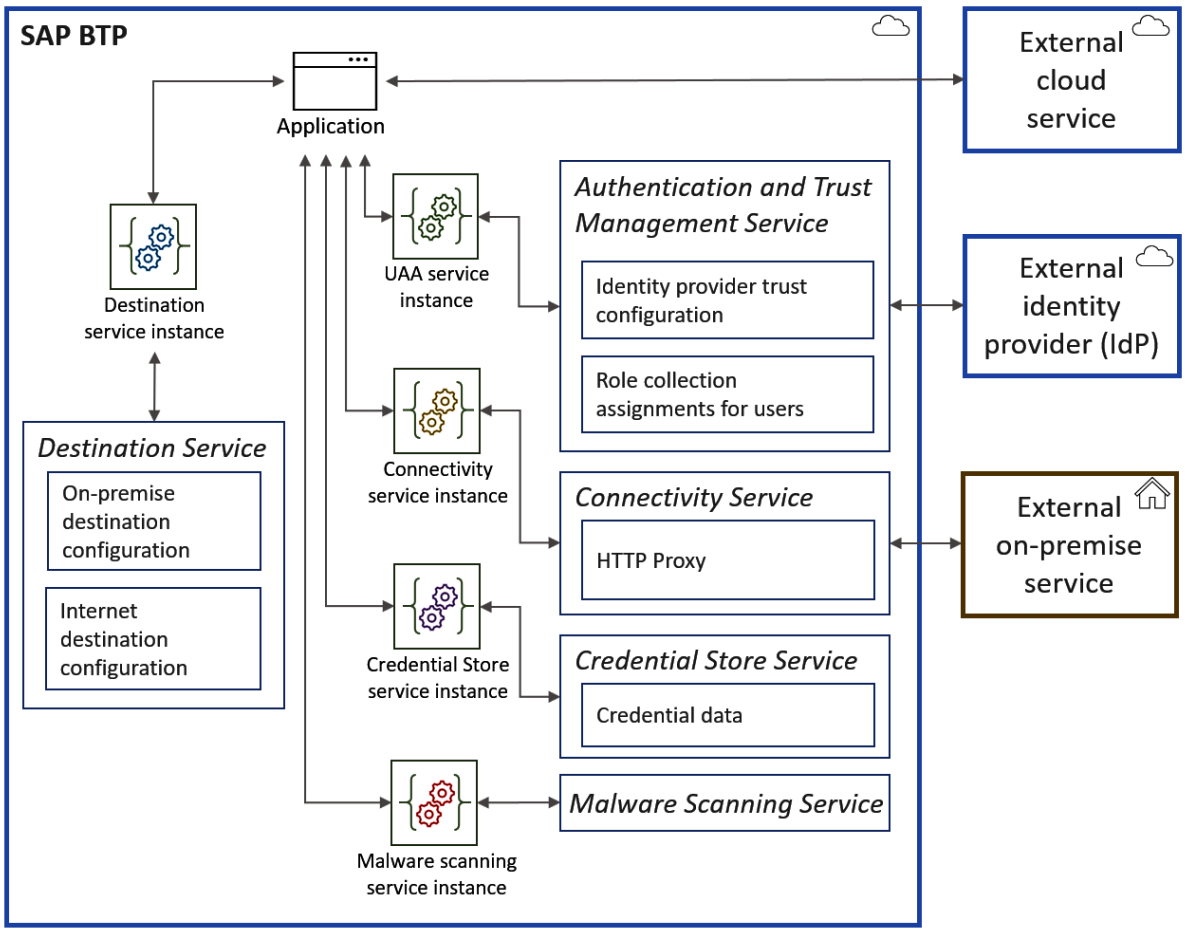
Integration	Data-to-Value	Extensibility

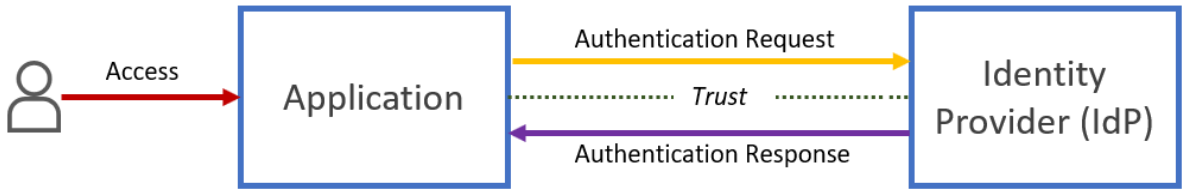
▪ SAP Integration Suite
  ▪ Cloud Integration
  ▪ API Management
  ▪ API Business Hub
  ▪ Open Connectors
  ▪ Integration Advisor
▪ Event Mesh
▪ ...
	▪ SAP HANA Cloud
	  ▪ HANA DB, ASE, Data Lake
	▪ SAP Analytics Cloud
	▪ Data Warehouse Cloud
	▪ PostgreSQL (hyperscaler)
	▪ Redis (hyperscaler)
	▪ Object Store
	▪ ...
		▪ SAP Workflow Management
		▪ SAP Intelligent RPA (iRPA)
		▪ Cloud Foundry and Kyma Runtimes
		▪ Authorization and Trust Management
		▪ Business Application Studio
		▪ Continuous Integration and Delivery
		▪ ...

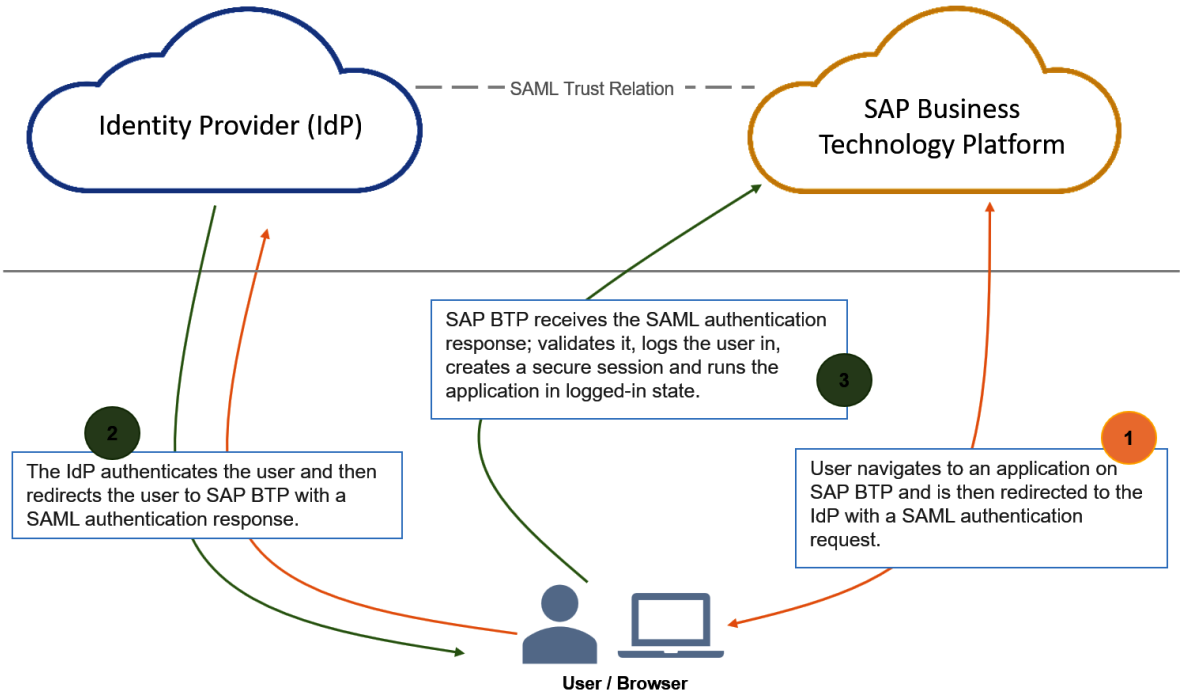
▪ SAP Data Intelligence ▪ Master Data Integration		

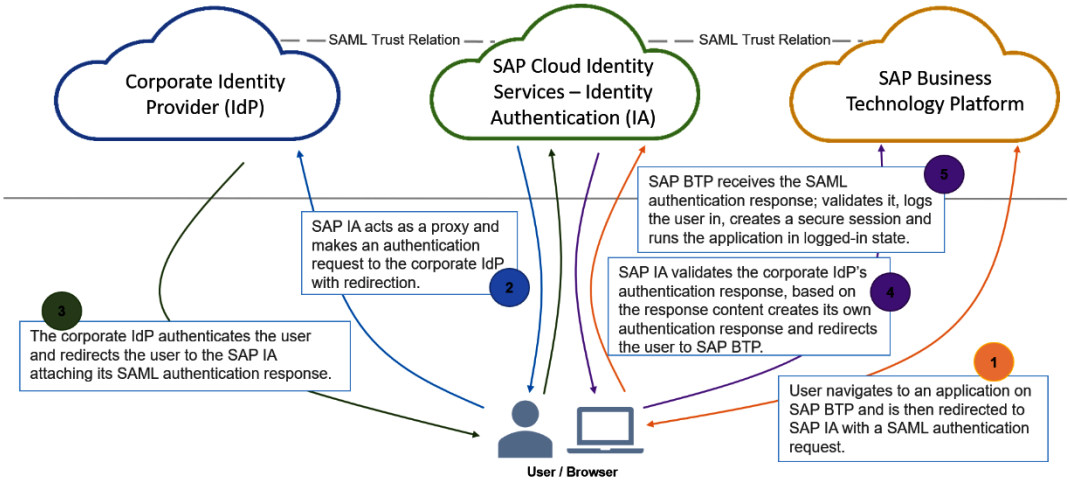
Chapter 4: Security and Connectivity

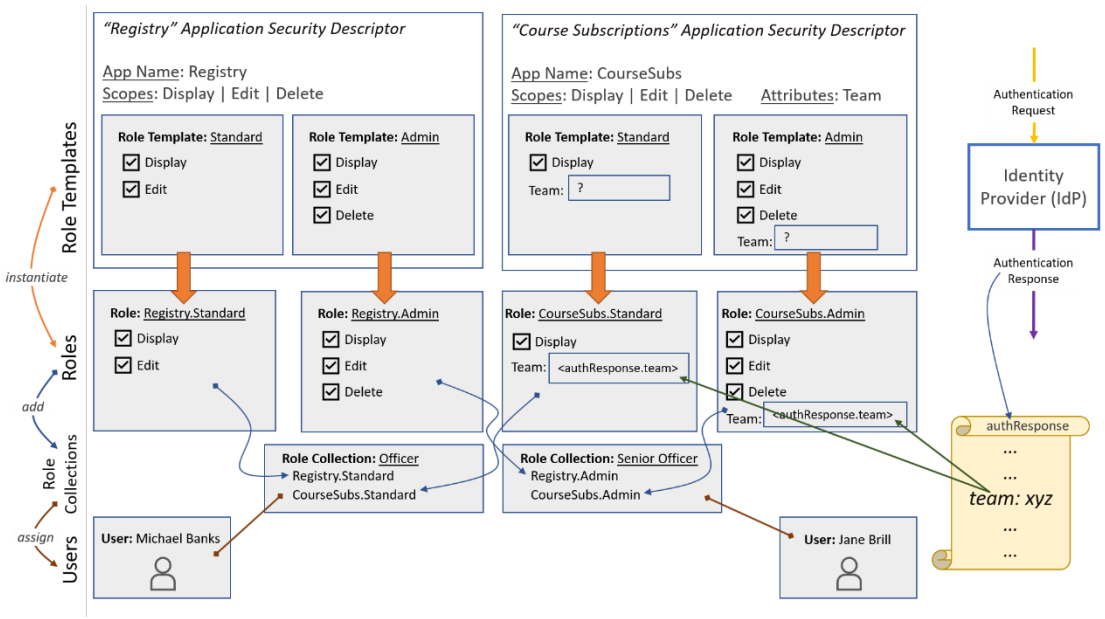


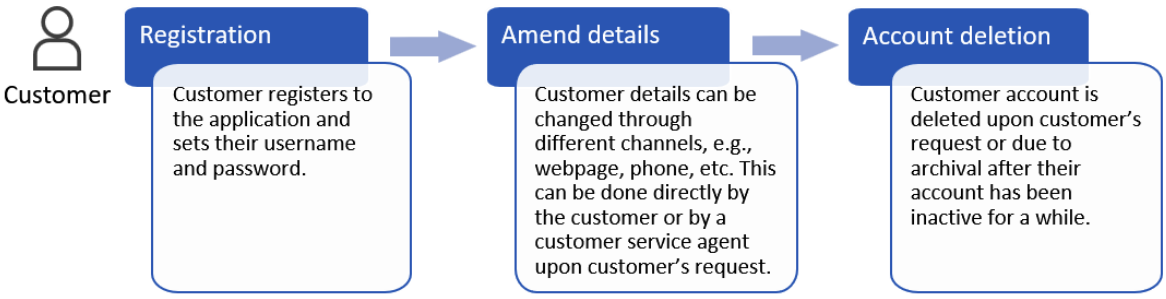

SAP BTP
Application
External cloud service
Destination service instance
UAA service instance
Authentication and Trust Management Service
Identity provider trust configuration
Role collection assignments for users
External identity provider (IdP)
Destination Service
On-premise destination configuration
Internet destination configuration
Connectivity service instance
Connectivity Service
HTTP Proxy
External on-premise service
Credential Store service instance
Credential Store Service
Credential data
Malware scanning service instance
Malware Scanning Service

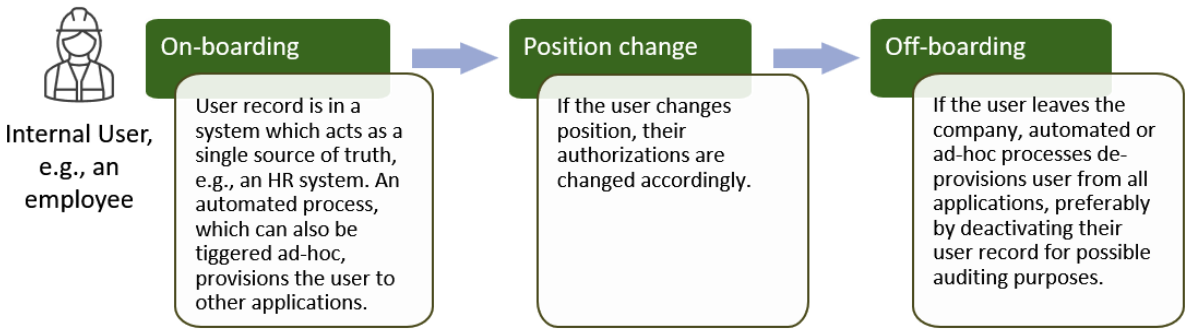

Access
Application
Authentication Request
Trust
Authentication Response
Identity Provider (IdP)

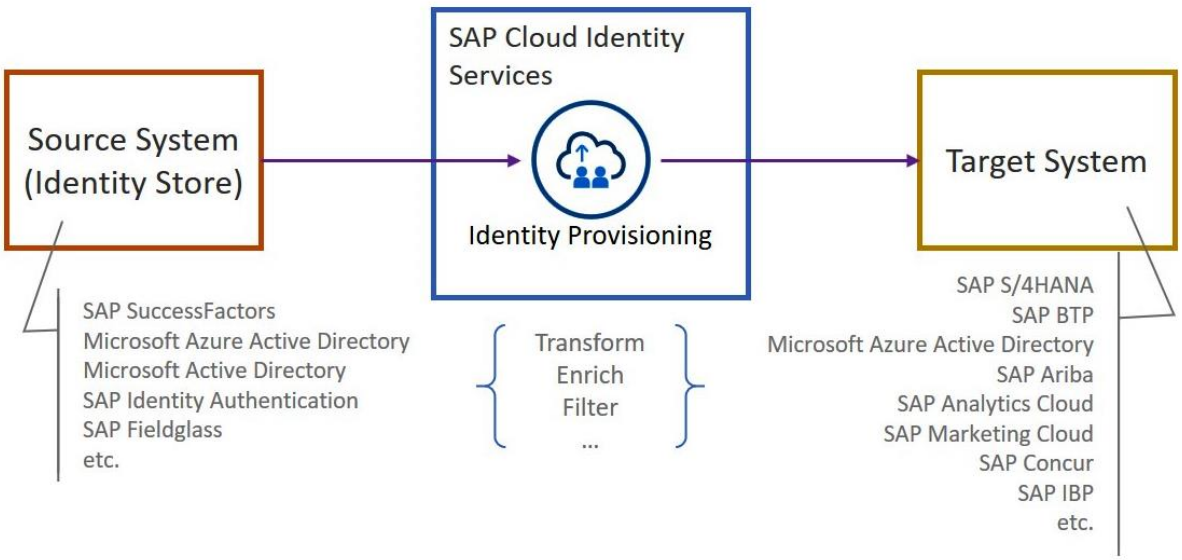

Identity Provider (IdP)
SAML Trust Relation
SAP Business Technology Platform
SAP BTP receives the SAML authentication response; validates it, logs the user in, creates a secure session and runs the application in logged-in state.
3
2
The IdP authenticates the user and then redirects the user to SAP BTP with a SAML authentication response.
1
User navigates to an application on SAP BTP and is then redirected to the IdP with a SAML authentication request.
User / Browser

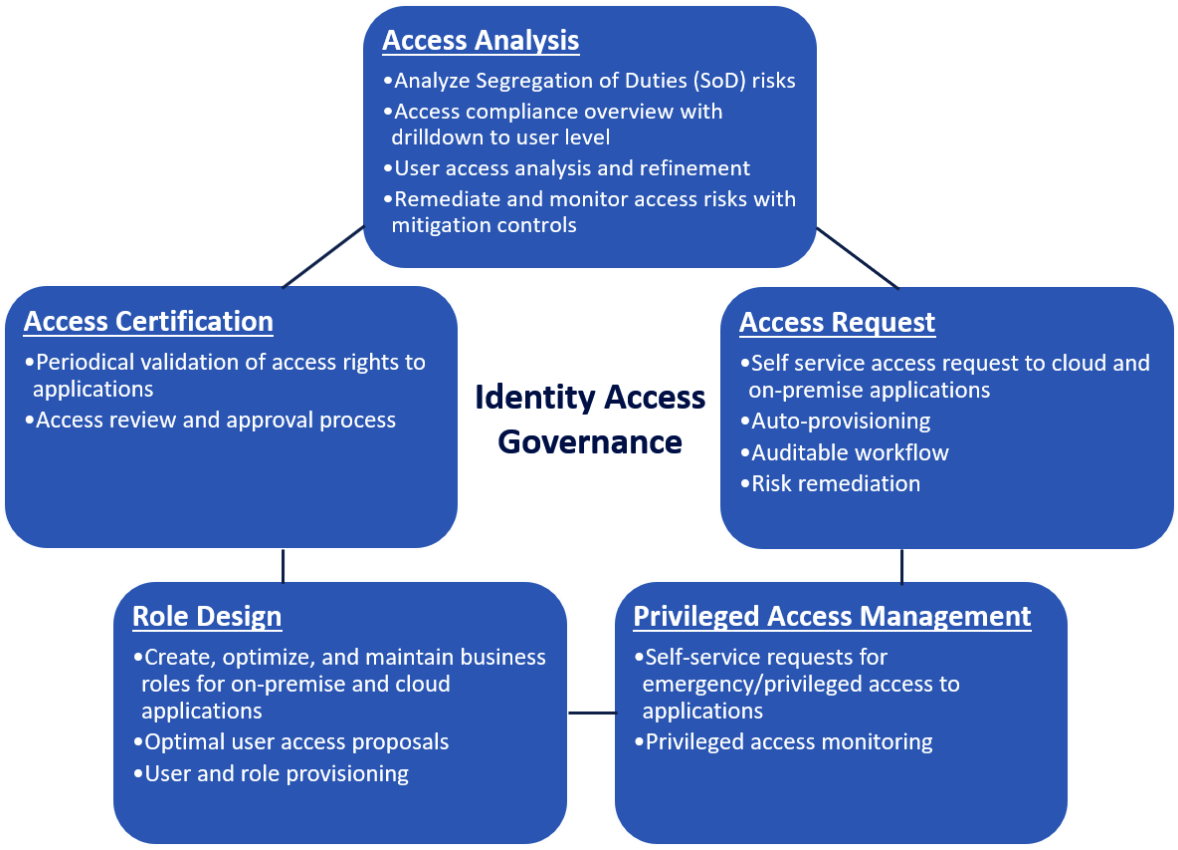

Corporate Identity Provider (IdP)
SAML Trust Relation
SAP Cloud Identity Services – Identity Authentication (IA)
SAML Trust Relation
SAP Business Technology Platform
SAP BTP receives the SAML authentication response; validates it, logs the user in, creates a secure session and runs the application in logged-in state.
5
SAP IA acts as a proxy and makes an authentication request to the corporate IdP with redirection.
2
SAP IA validates the corporate IdP's authentication response, based on the response content creates its own authentication response and redirects the user to SAP BTP.
4
3
The corporate IdP authenticates the user and redirects the user to the SAP IA attaching its SAML authentication response.
1
User navigates to an application on SAP BTP and is then redirected to SAP IA with a SAML authentication request.
User / Browser

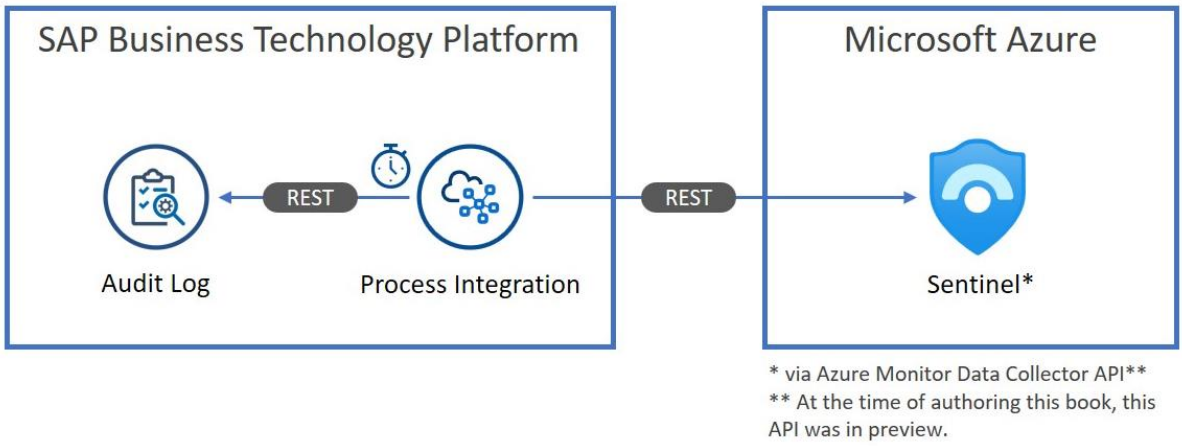

"Registry" Application Security Descriptor
App Name: Registry
Scopes: Display | Edit | Delete
Role Template: Standard
Display
Edit
Role Template: Admin
Display
Edit
Delete
"Course Subscriptions" Application Security Descriptor
App Name: CourseSubs
Scopes: Display | Edit | Delete
Attributes: Team
Role Template: Standard
Display
Team: ?
Role Template: Admin
Display
Edit
Delete
Team: ?
Role Templates
instantiate
Roles
add
Role Collections
assign
Users
Role: Registry.Standard
Display
Edit
Role: Registry.Admin
Display
Edit
Delete
Role: CourseSubs.Standard
Display
Team: <authResponse.team>
Role: CourseSubs.Admin
Display
Edit
Delete
Team: <authResponse.team>
Role Collection: Officer
Registry.Standard
CourseSubs.Standard
Role Collection: Senior Officer
Registry.Admin
CourseSubs.Admin
User: Michael Banks
User: Jane Brill
Authentication Request
Identity Provider (IdP)
Authentication Response
authResponse
...
...
team: xyz
...
...


Customer
Registration
Customer registers to the application and sets their username and password.
Amend details
Customer details can be changed through different channels, e.g., webpage, phone, etc. This can be done directly by the customer or by a customer service agent upon customer's request.
Account deletion
Customer account is deleted upon customer's request or due to archival after their account has been inactive for a while.

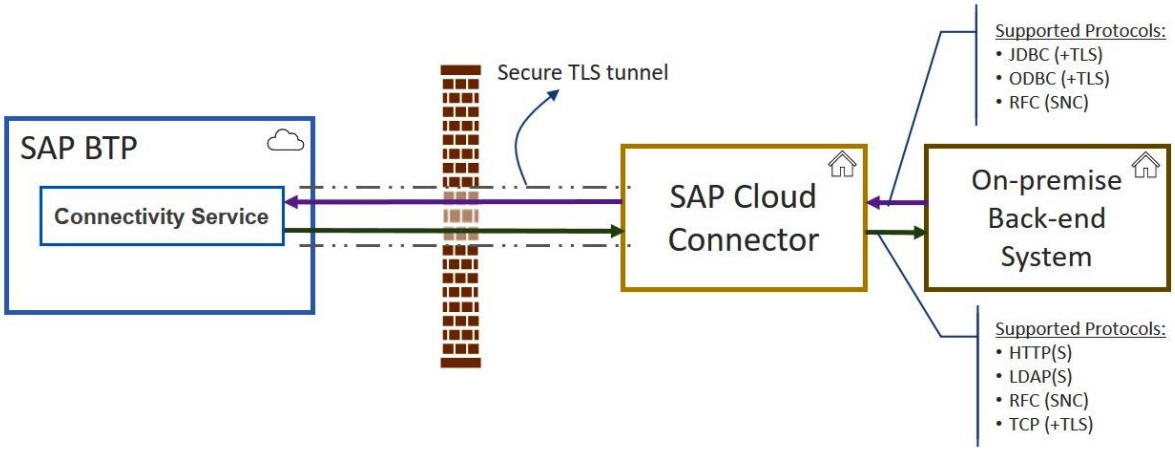

Internal User, e.g., an employee
On-boarding
User record is in a system which acts as a single source of truth, e.g., an HR system. An automated process, which can also be tiggered ad-hoc, provisions the user to other applications.
Position change
If the user changes position, their authorizations are changed accordingly.
Off-boarding
If the user leaves the company, automated or ad-hoc processes de-provisions user from all applications, preferably by deactivating their user record for possible auditing purposes.

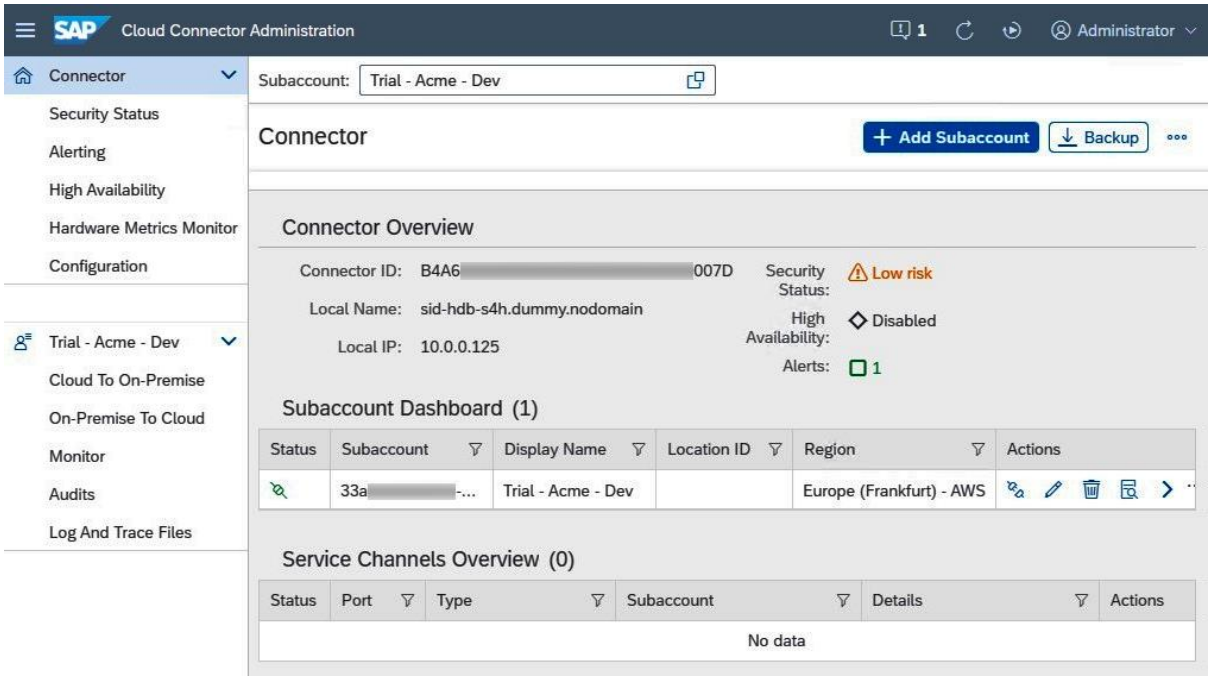

SAP Cloud Identity Services
Source System (Identity Store)
Identity Provisioning
Target System
SAP SuccessFactors
Microsoft Azure Active Directory
Microsoft Active Directory
SAP Identity Authentication
SAP Fieldglass
etc.
Transform
Enrich
Filter
...
SAP S/4HANA
SAP BTP
Microsoft Azure Active Directory
SAP Ariba
SAP Analytics Cloud
SAP Marketing Cloud
SAP Concur
SAP IBP
etc.

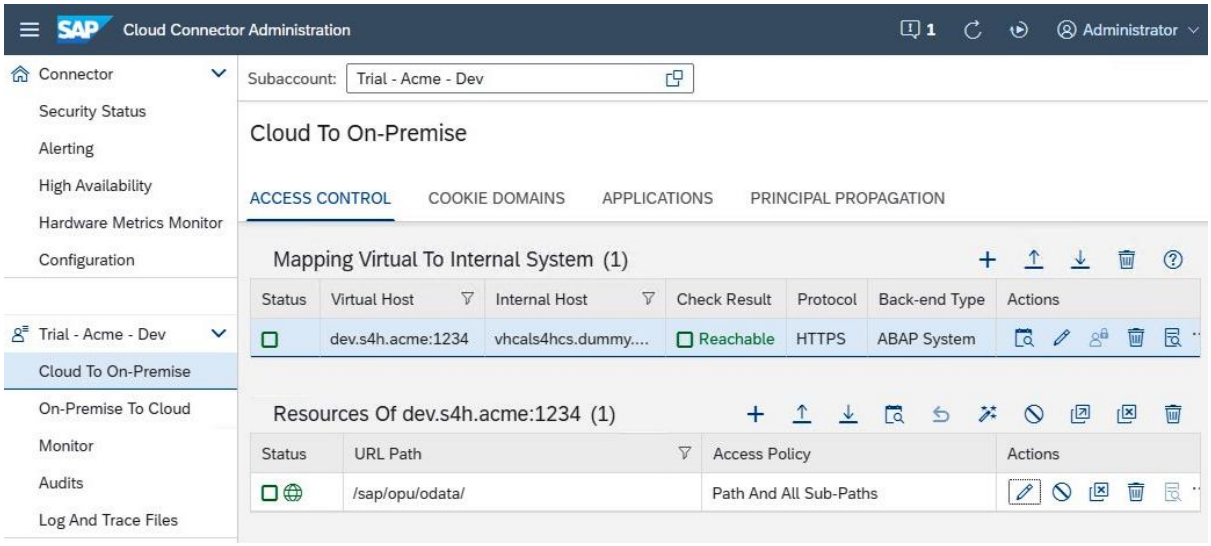

Access Analysis
•Analyze Segregation of Duties (SoD) risks
•Access compliance overview with drilldown to user level
•User access analysis and refinement
•Remediate and monitor access risks with mitigation controls
Access Certification
•Periodical validation of access rights to applications
•Access review and approval process
Identity Access Governance
Access Request
•Self service access request to cloud and on-premise applications
•Auto-provisioning
•Auditable workflow
•Risk remediation
Role Design
•Create, optimize, and maintain business roles for on-premise and cloud applications
•Optimal user access proposals
•User and role provisioning
Privileged Access Management
•Self-service requests for emergency/privileged access to applications
•Privileged access monitoring

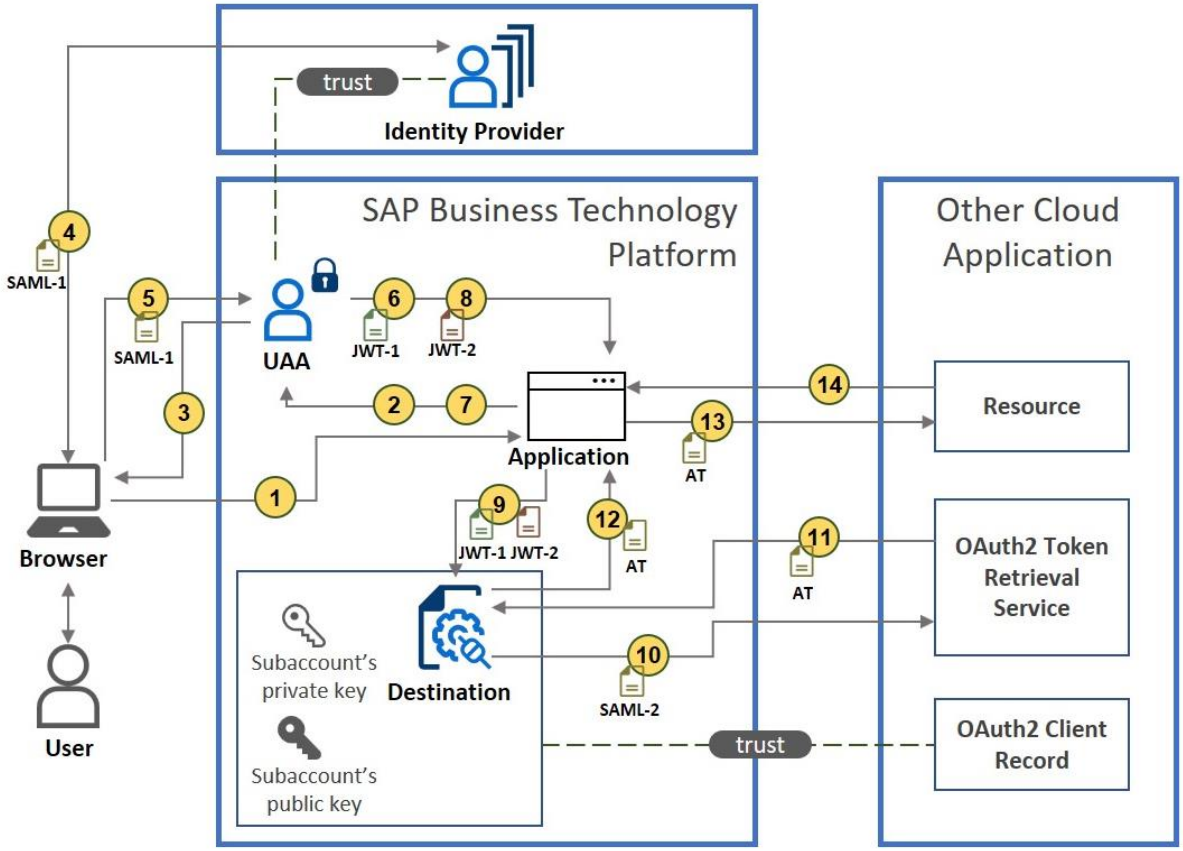


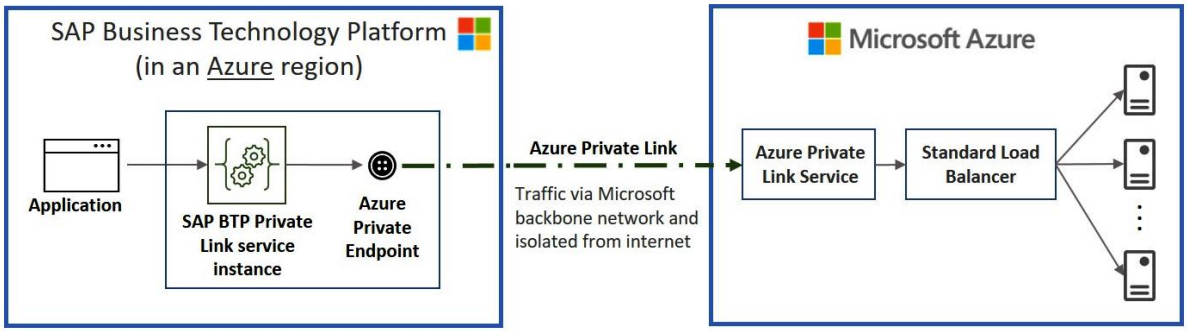
* via Azure Monitor Data Collector API**
** At the time of authoring this book, this API was in preview.



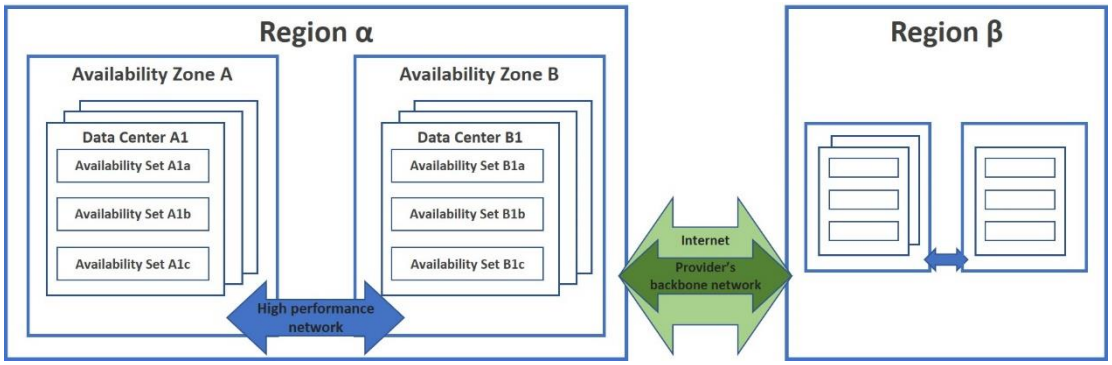


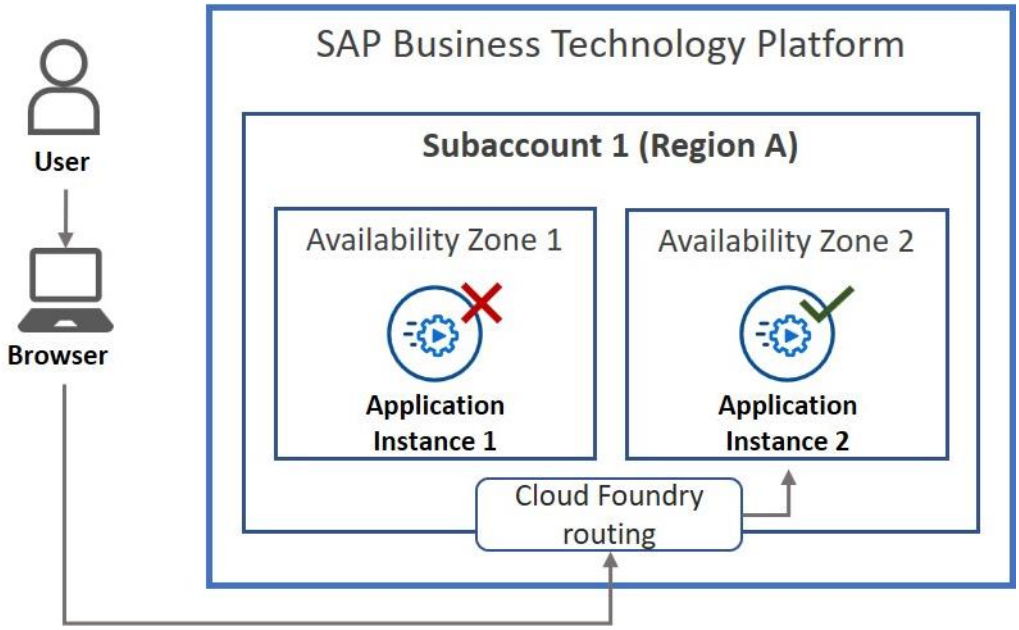

Cloud Connector Administration
Administrator
Connector
Security Status
Alerting
High Availability
Hardware Metrics Monitor
Configuration
Trial - Acme - Dev
Cloud To On-Premise
On-Premise To Cloud
Monitor
Audits
Log And Trace Files
Subaccount: Trial - Acme - Dev
Cloud To On-Premise
ACCESS CONTROL
COOKIE DOMAINS
APPLICATIONS
PRINCIPAL PROPAGATION
Mapping Virtual To Internal System (1)
Status
Virtual Host
Internal Host
Check Result
Protocol
Back-end Type
Actions
dev.s4h.acme:1234
vhcals4hcs.dummy....
Reachable
HTTPS
ABAP System
Resources Of dev.s4h.acme:1234 (1)
Status
URL Path
Access Policy
Actions
/sap/opu/odata/
Path And All Sub-Paths

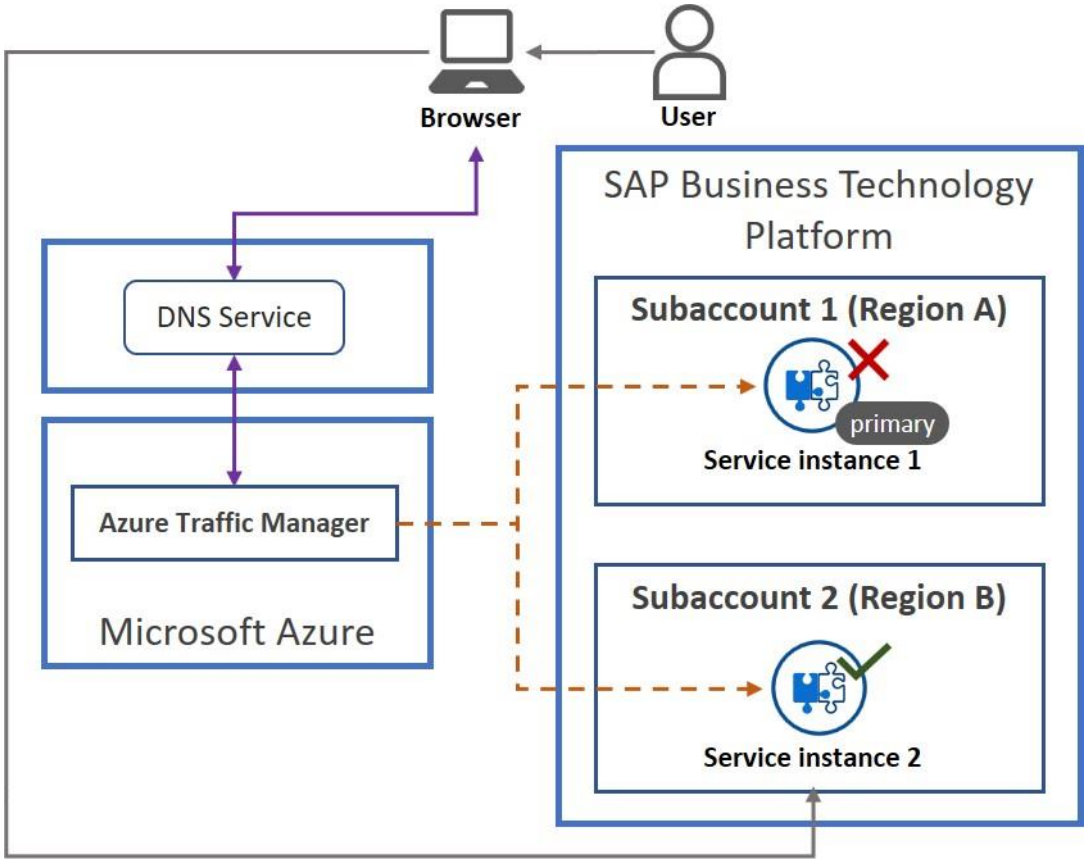

trust
Identity Provider
SAP Business Technology Platform
Other Cloud Application
SAML-1
SAML-1
UAA
JWT-1
JWT-2
Application
AT
Resource
Browser
JWT-1 JWT-2
AT
AT
OAuth2 Token Retrieval Service
Subaccount's private key
Destination
SAML-2
User
Subaccount's public key
trust
OAuth2 Client Record

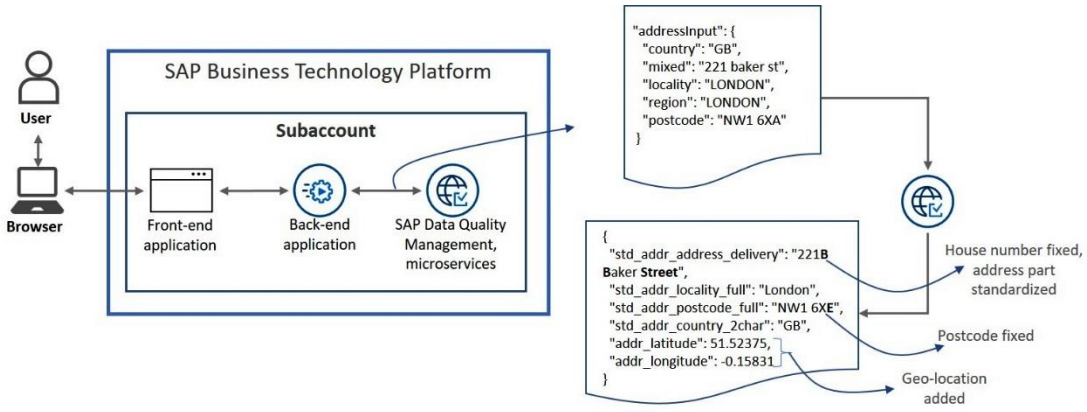

SAP Business Technology Platform
(in an Azure region)
Application
SAP BTP Private Link service instance
Azure Private Endpoint
Azure Private Link
Traffic via Microsoft backbone network and isolated from internet
Microsoft Azure
Azure Private Link Service
Standard Load Balancer

Chapter 5: Non-Functional Design for Operability



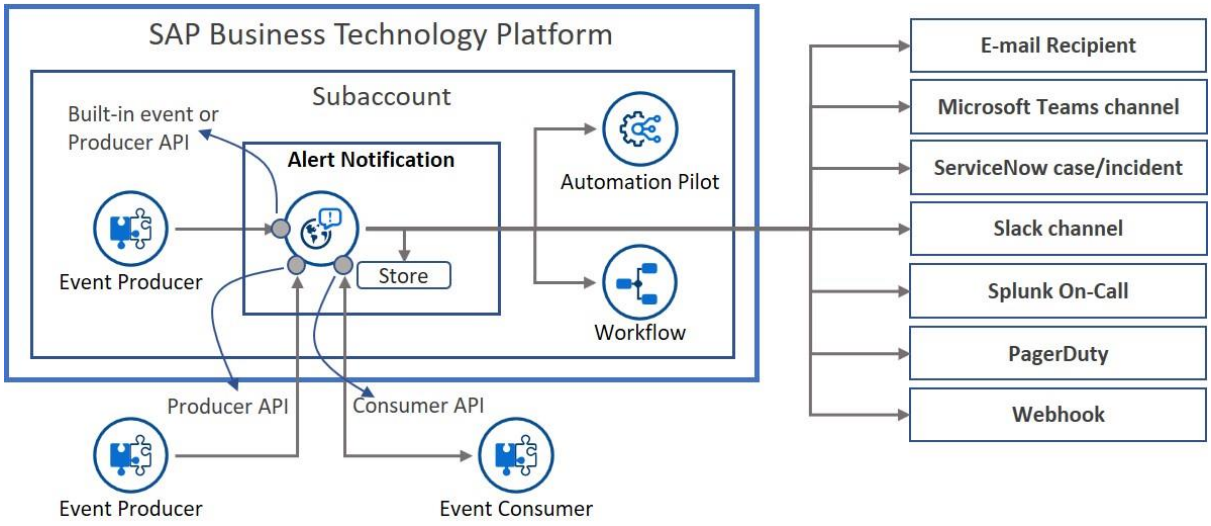



Browser
User
SAP Business Technology Platform
DNS Service
Subaccount 1 (Region A)
primary
Service instance 1
Azure Traffic Manager
Microsoft Azure
Subaccount 2 (Region B)
Service instance 2


User
Browser
SAP Business Technology Platform
Subaccount
Front-end application
Back-end application
SAP Data Quality Management, microservices
"addressInput": {
"country": "GB",
"mixed": "221 baker st",
"locality": "LONDON",
"region": "LONDON",
"postcode": "NW1 6XA"
}
{
"std_addr_address_delivery": "221B Baker Street",
"std_addr_locality_full": "London",
"std_addr_postcode_full": "NW1 6XE",
"std_addr_country_2char": "GB",
"addr_latitude": 51.52375,
"addr_longitude": -0.15831
}
House number fixed, address part standardized
Postcode fixed
Geo-location added

SAP HANA Database Configurations

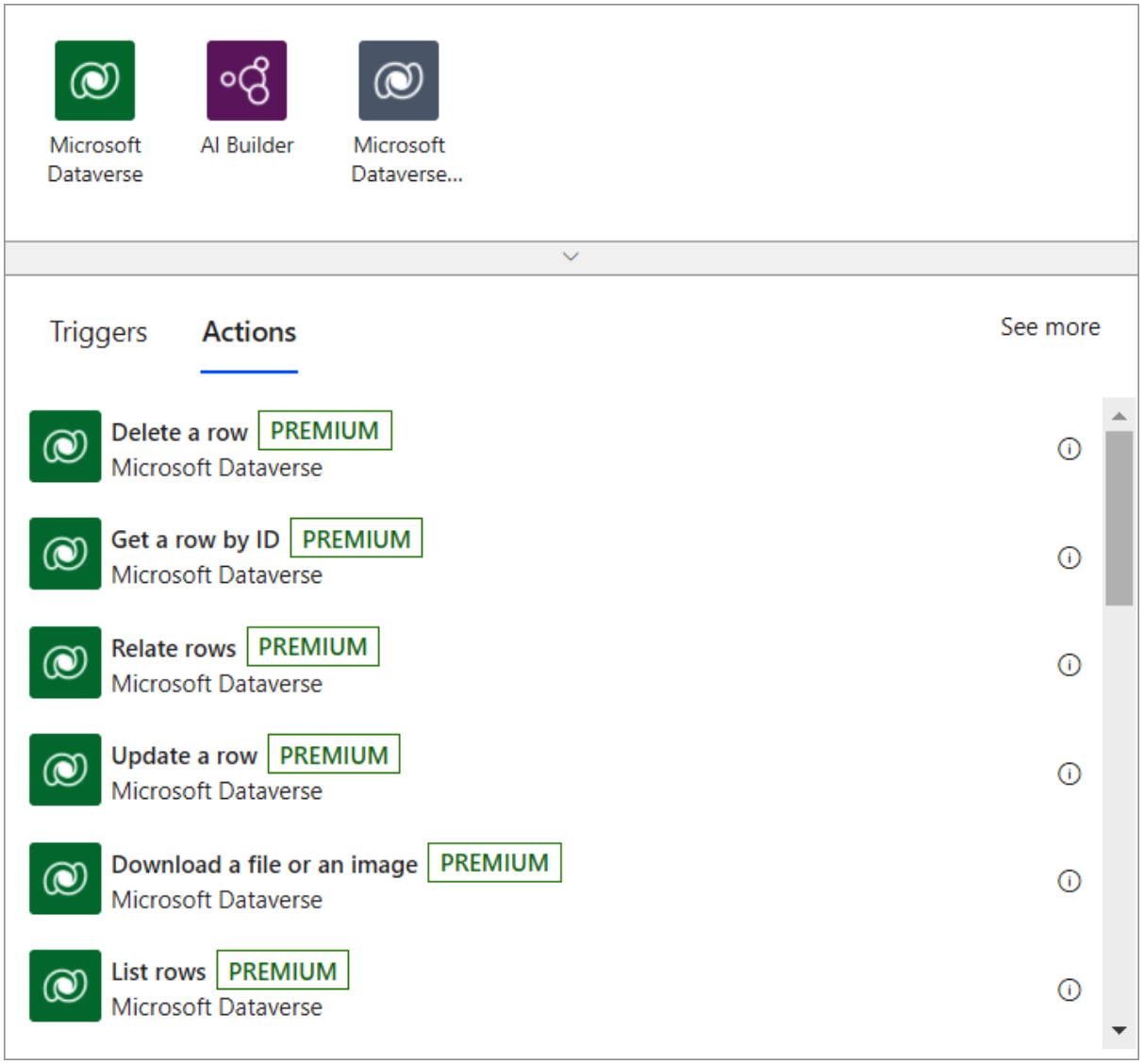
Name	Amount	Rate	Activity Hours	CU (per month)
Memory Memory size of a SAP HANA database	128 GB	**0.025 CU / GB / Hour**	**730**	**2336.00** CU
Compute The number of vCPUs of a SAP HANA database	8 vCPUs	**0.184 CU / vCPU / Hour**	**730**	**1074.56** CU
Storage The disk storage space of a SAP HANA database	360 GB	**0.013 CU / 16 GB / Hour**	**730** **(fixed per month)**	**213.52** CU
Backup Storage The backup storage space of a SAP HANA database	2688 GB	**0.011 CU / 64 GB / Hour**	**730** **(fixed per month)**	**337.26** CU
Network Data Transfer The amount of network traffic	128 GB	**0.438 CU / GB**	**N/A**	**56.06** CU
SAP Cloud Connector Connect to an on-premise SAP HANA database		**0.197 CU / Hour**	**730**	**0.00** CU
Synchronous Replicas Number of synchronous replicas of a SAP HANA database	1 Replicas		**730**	**3624.09** CU
Total Estimate				**7641.49** CU



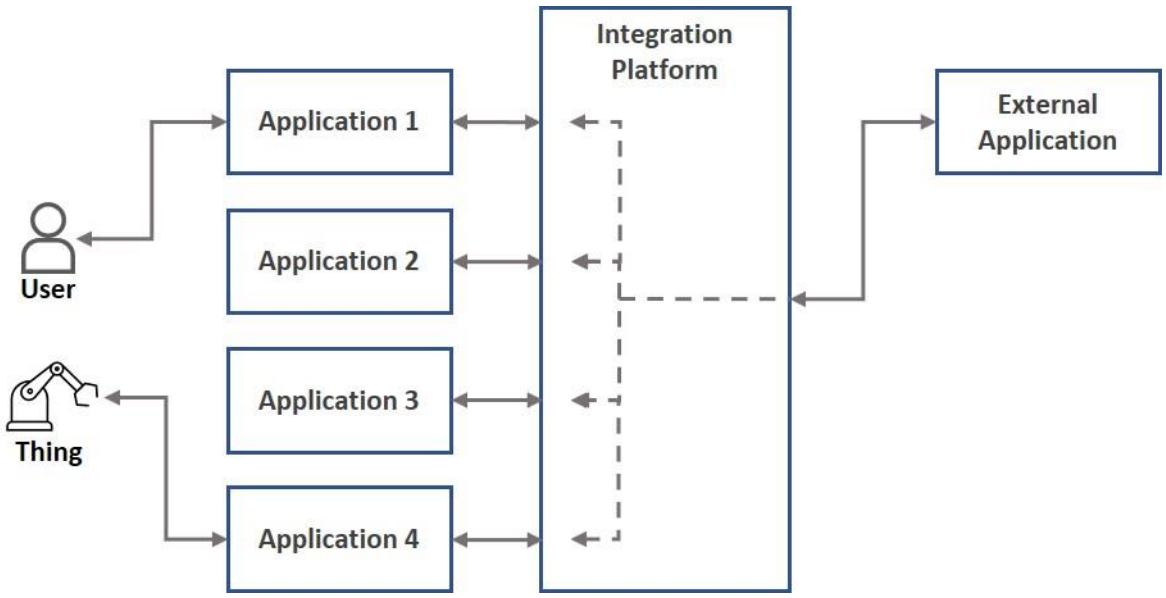
Support

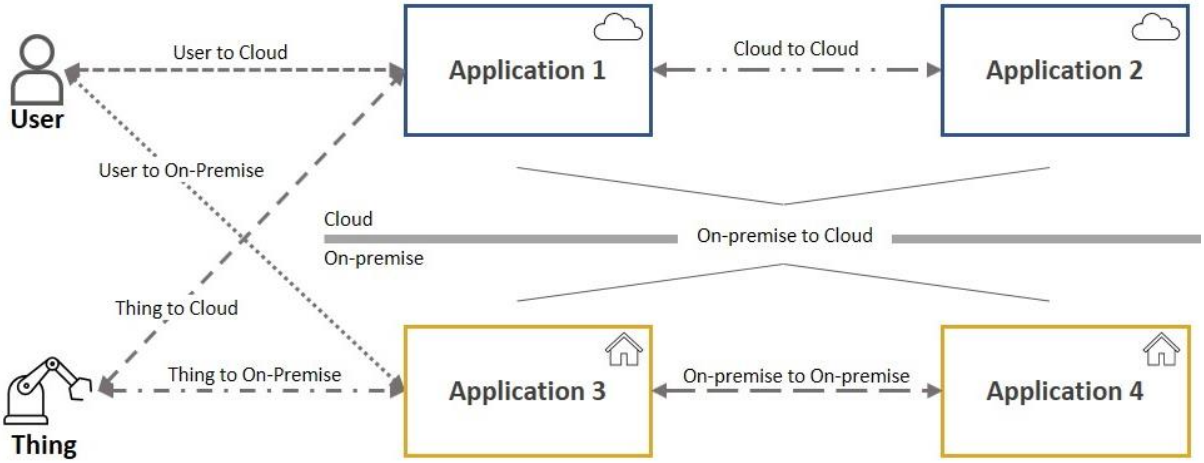
How to report an incident

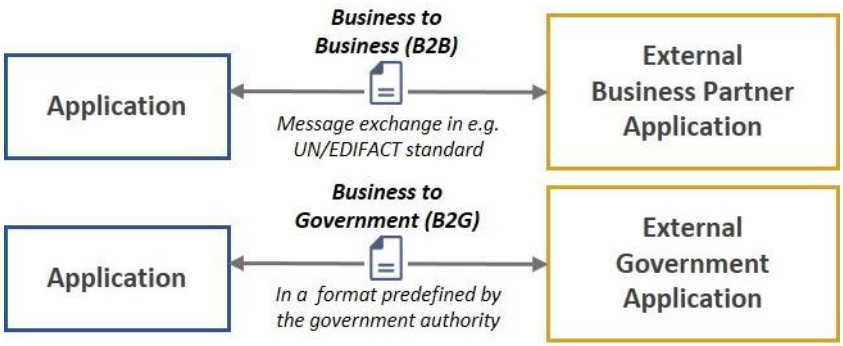
Support component for this service: EP-CPP-CF

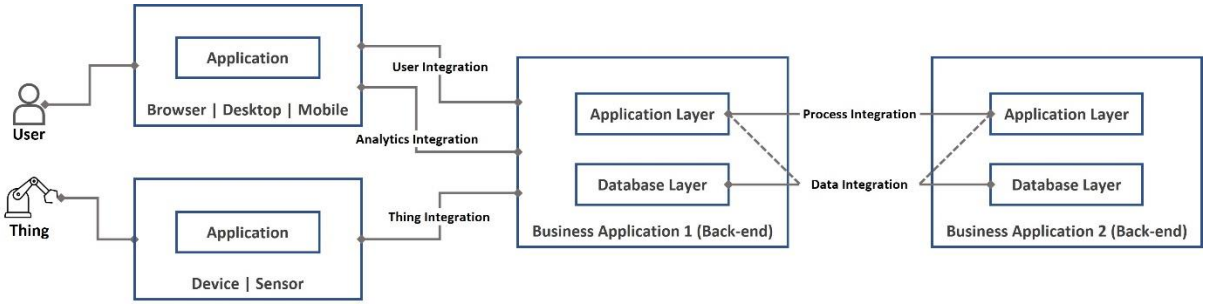

Microsoft Dataverse
AI Builder
Microsoft Dataverse...
Triggers
Actions
See more
Delete a row PREMIUM
Microsoft Dataverse
Get a row by ID PREMIUM
Microsoft Dataverse
Relate rows PREMIUM
Microsoft Dataverse
Update a row PREMIUM
Microsoft Dataverse
Download a file or an image PREMIUM
Microsoft Dataverse
List rows PREMIUM
Microsoft Dataverse

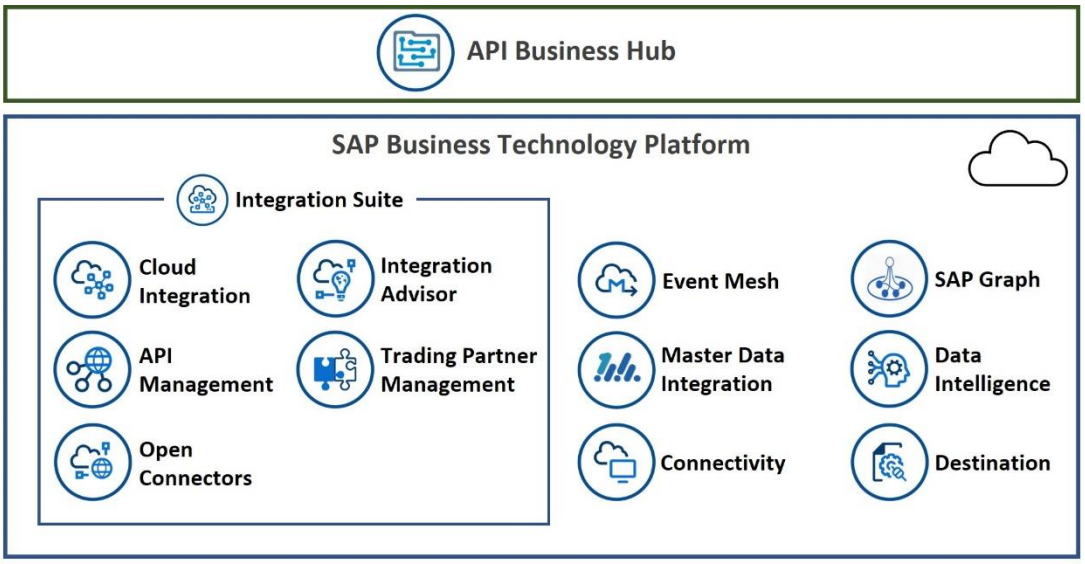
Chapter 6: Defining Integration Strategy





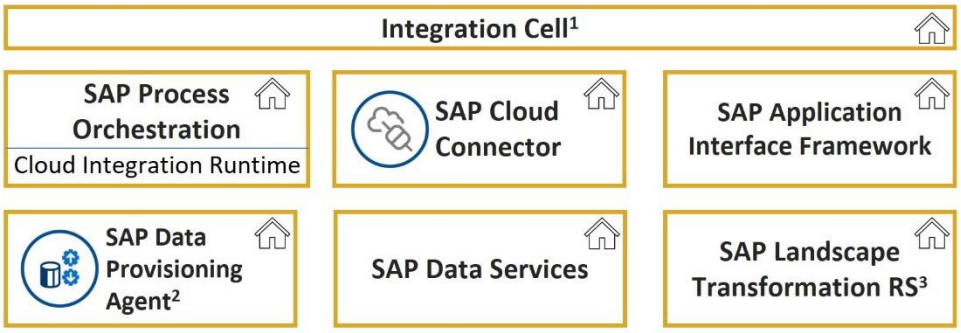






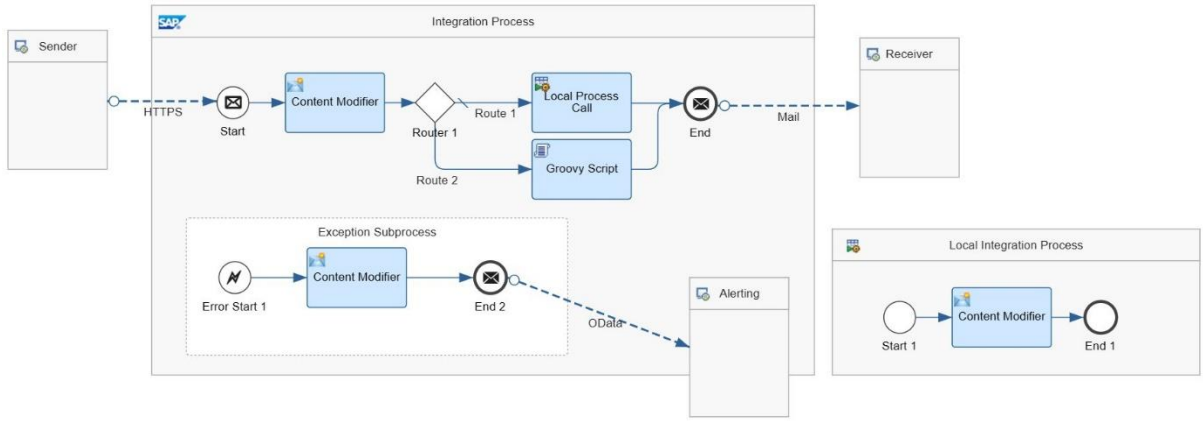
Cloud

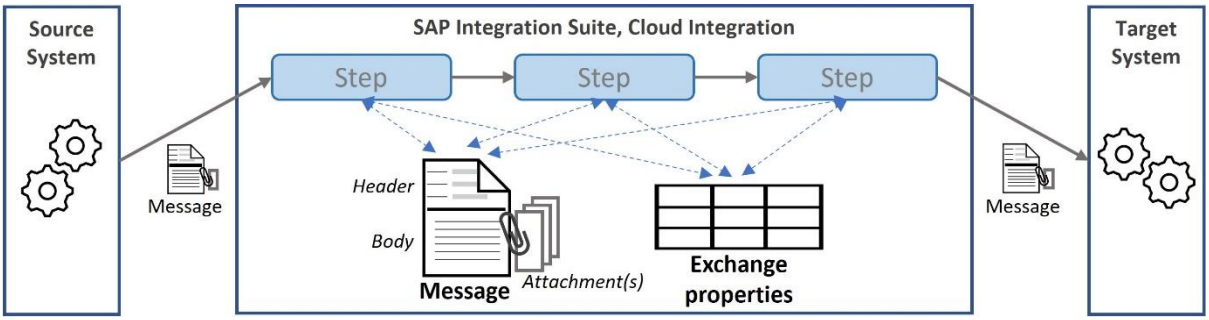
On-premise

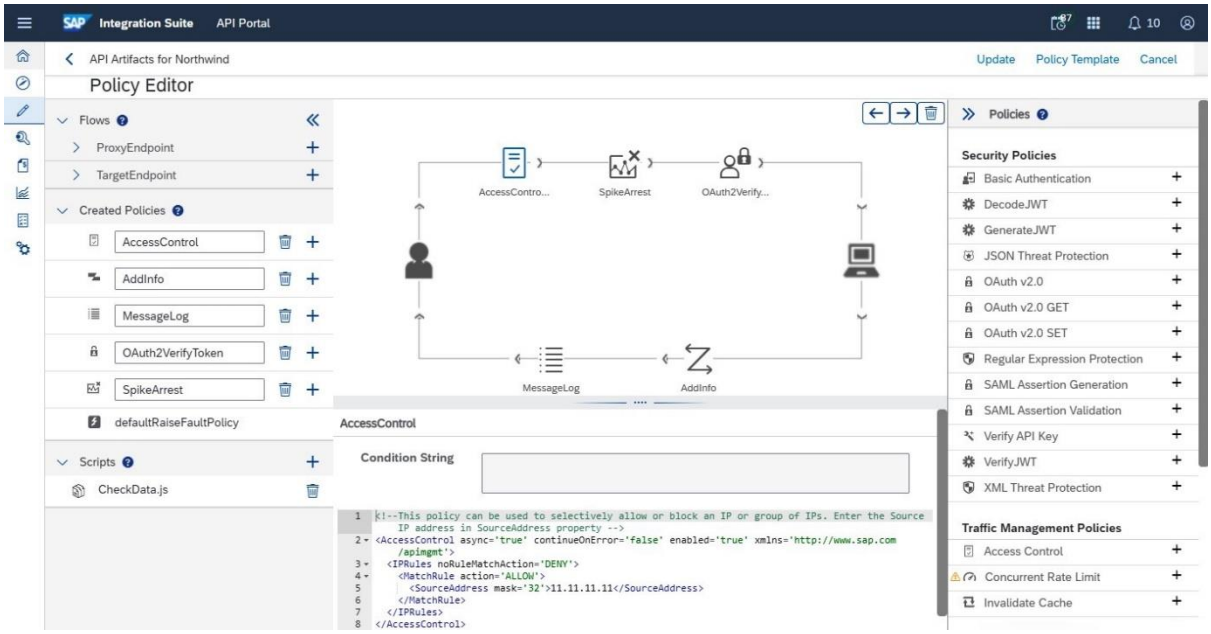


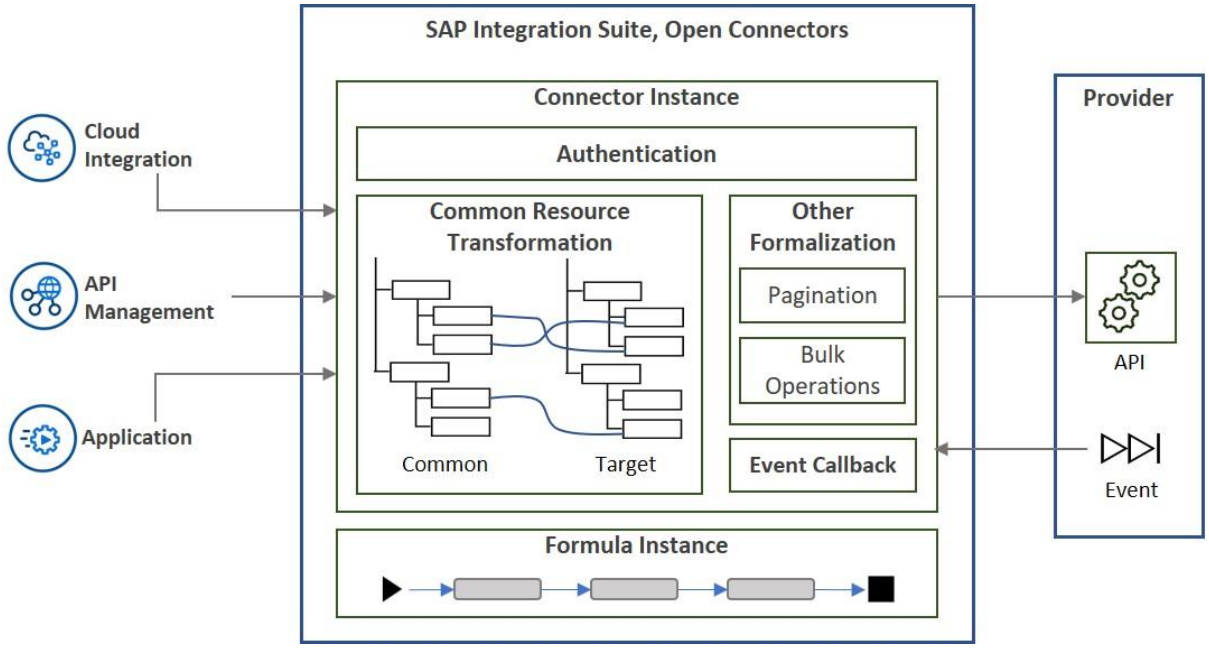
1) In the roadmap – Integration suite services and runtimes in a containerized environment.
2) SAP HANA Smart Data Integration (SDI) **3)** SAP Landscape Transformation Replication Server (SLT RS)

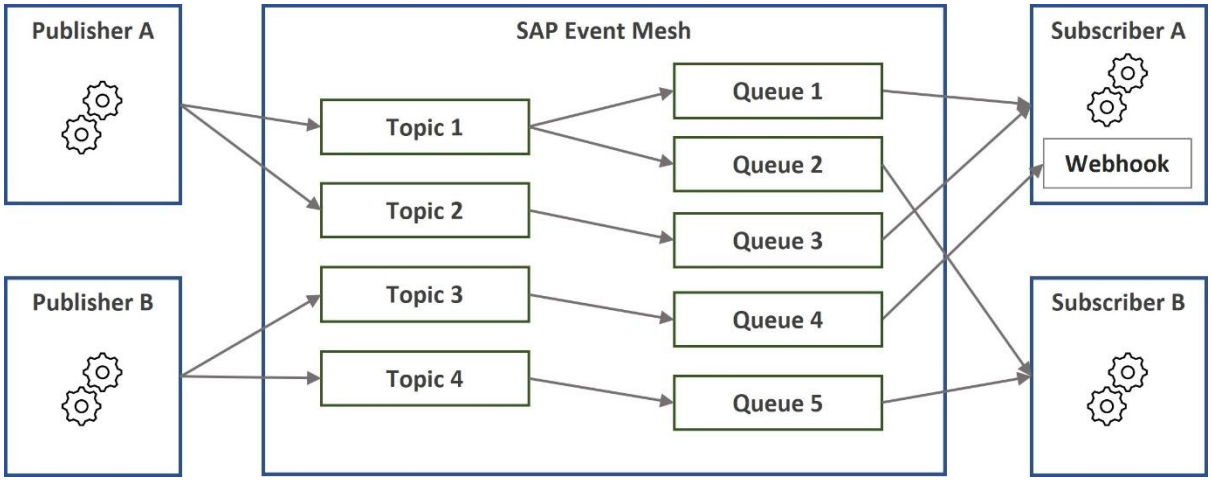
Chapter 7: Cloud Integration

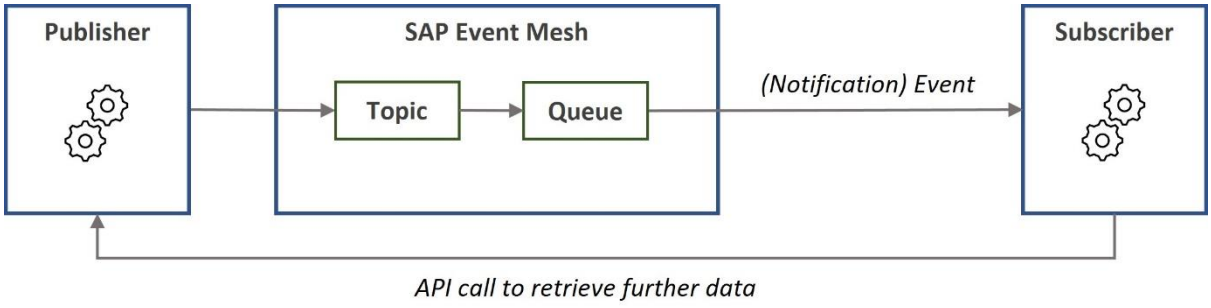




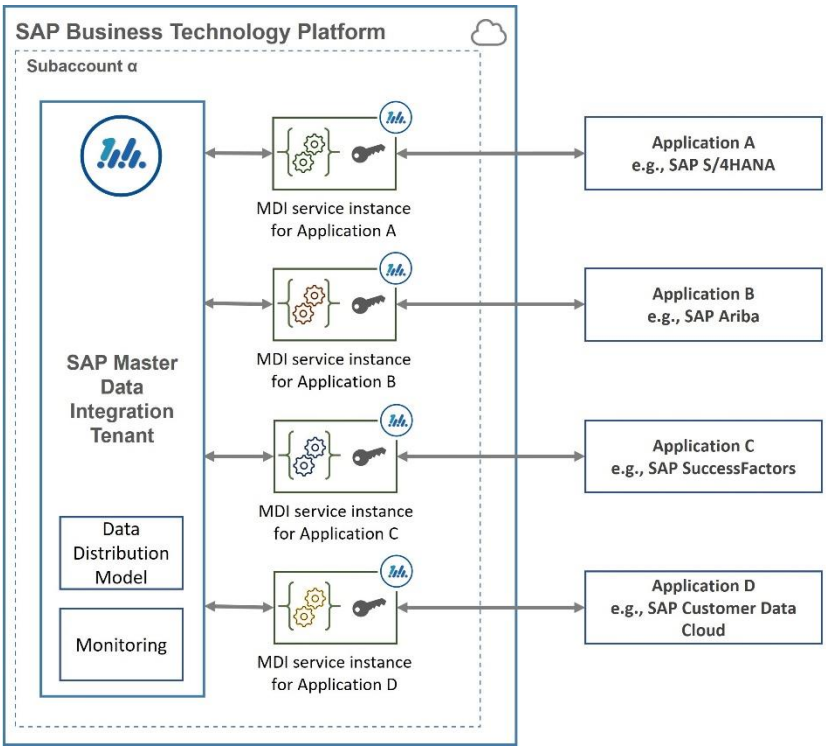



SAP Integration Suite, Open Connectors
Connector Instance
Authentication
Common Resource Transformation
Common
Target
Other Formalization
Pagination
Bulk Operations
Event Callback
Formula Instance
Cloud Integration
API Management
Application
Provider
API
Event


Publisher A
Publisher B
SAP Event Mesh
Topic 1
Topic 2
Topic 3
Topic 4
Queue 1
Queue 2
Queue 3
Queue 4
Queue 5
Subscriber A
Webhook
Subscriber B


Publisher
SAP Event Mesh
Topic
Queue
(Notification) Event
Subscriber
API call to retrieve further data

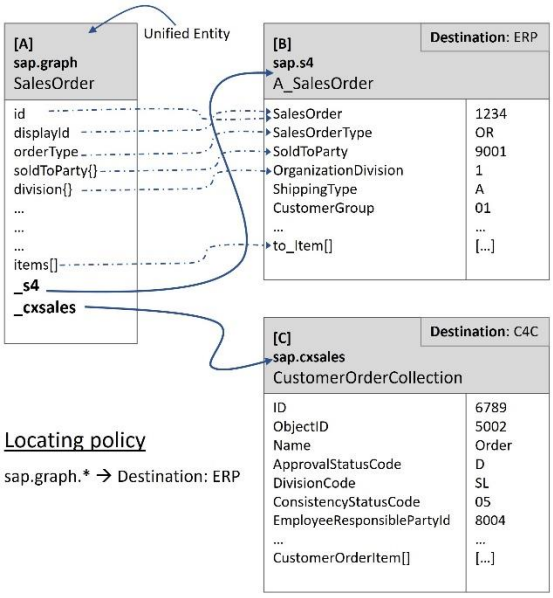
```
{
    "specversion": "1.0",
    "id": "e940019e-a96b-43d1-ae1c-585219493f50",
    "source": "/default/com.sstest.app01/1",
    "type": "com.sstest.app01.BusinessObject.Created/v1",
    "subject": "businessObjectId:1234567",
    "time": "2022-02-06T21:36:21Z",
    "comsstestapp01extension1" : "ssimsekler",
    "ccomsstestapp01othervalue" : 11,
    "datacontenttype" : "application/json",
    "data": {
        "businessObjectId": "1234567"
    }
}
```

Supported Applications*

- SAP S/4HANA
- SAP Ariba
- SAP SuccessFactors
- SAP Sales/Service Cloud
- SAP Customer Data Cloud
- SAP Commerce Cloud
- SAP Subscription Billing
- SAP Concur
- SAP Master Data Governance

**At the time of authoring this book*



Locating policy

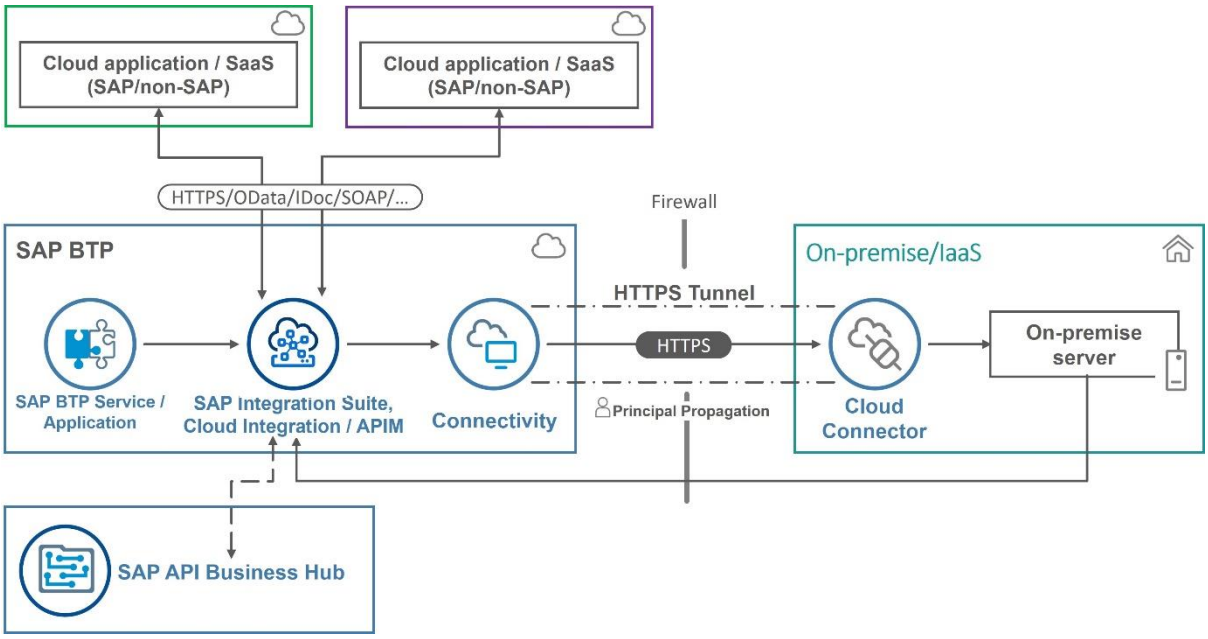
sap.graph.* → Destination: ERP

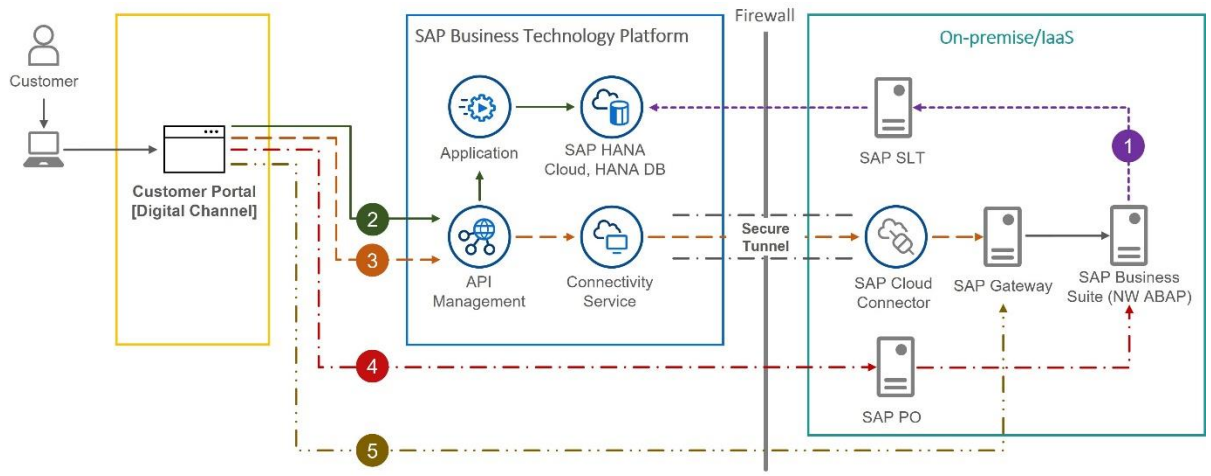
URL	Response Payload

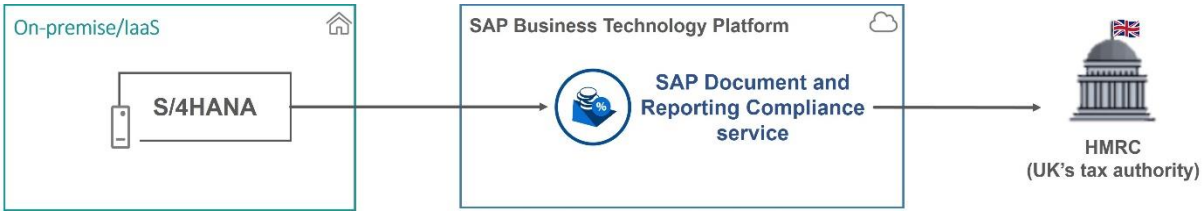
[A]
/sap.graph/SalesOrder/s4~1234
	{
	"id": "s4~1234",
	"displayId": "1234",
	"orderType": "OR",
	"soldToParty": "9001",
	"division": "1",
	...
	"items": [...]
	}

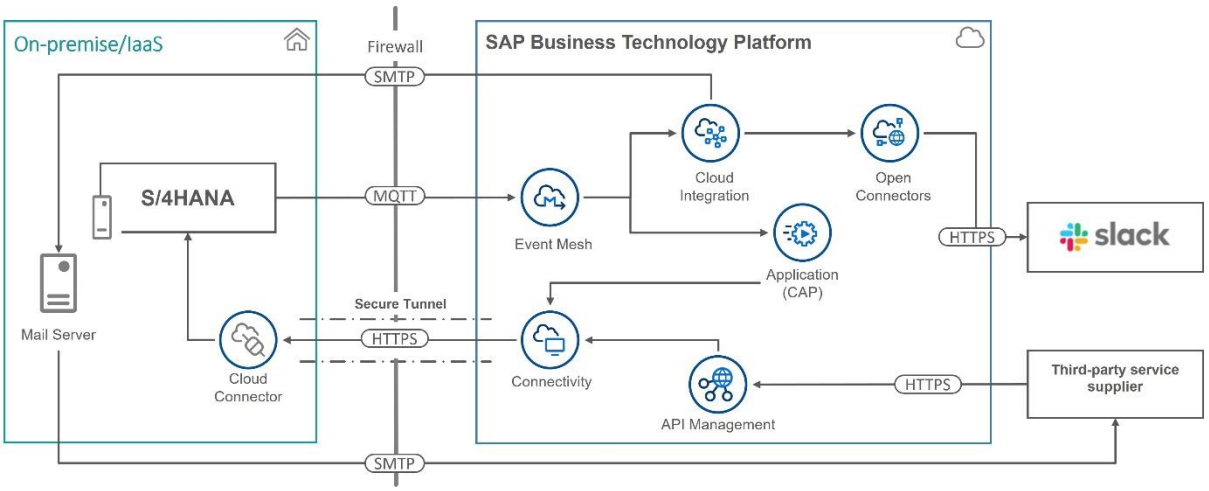
[B]
/sap.graph/SalesOrder/s4~1234/_s4
	{
	"SalesOrder": "1234",
	"SalesOrderType": "OR",
	"SoldToParty": "9001",
	"OrganizationDivision": "1",
	...
	"to_Item": [...]
	}

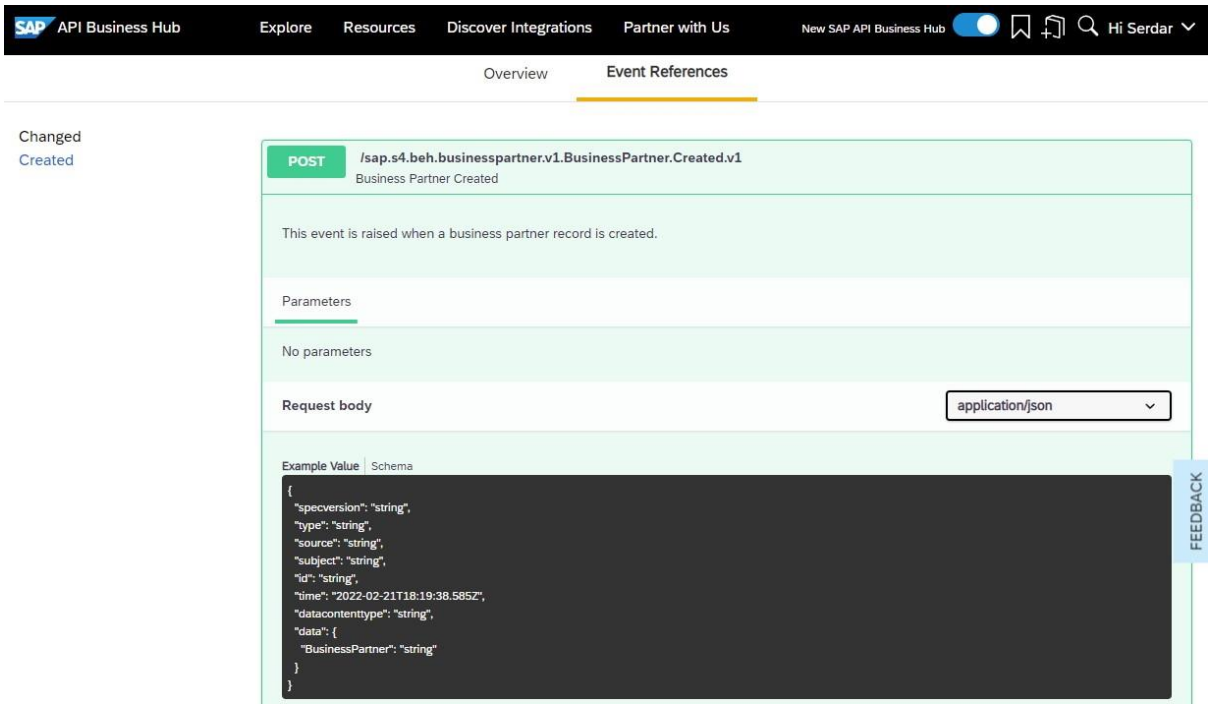
[C]
/sap.graph/SalesOrder/s4~1234/_cxsales
	{
	"ID": "6789",
	"ObjectID": "5002",
	"Name": "Order",
	"ApprovalStatusCode": "D",
	"DivisionCode": "SL",
	"ConsistencyStatusCode": "05",
	"EmployeeResponsiblePartyId": "8004",
	...
	"CustomerOrderItem": [...]
	}



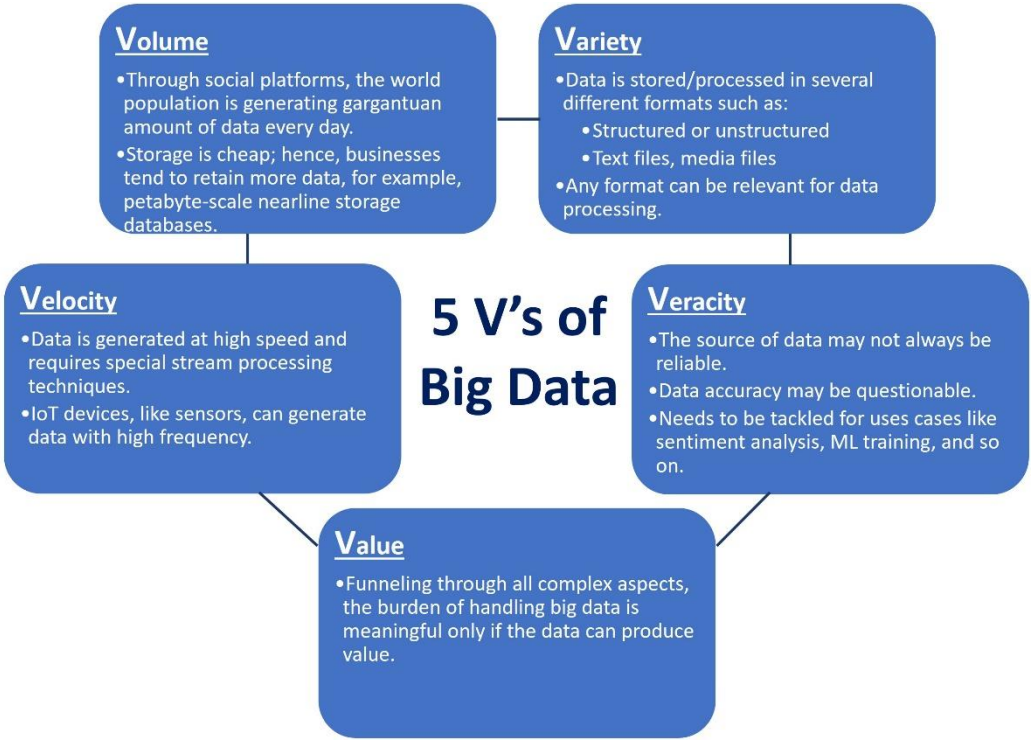

Customer
Customer Portal
[Digital Channel]
SAP Business Technology Platform
Application
SAP HANA
Cloud, HANA DB
API
Management
Connectivity
Service
Firewall
Secure
Tunnel
On-premise/IaaS
SAP SLT
SAP Cloud
Connector
SAP Gateway
SAP Business
Suite (NW ABAP)
SAP PO
1
2
3
4
5

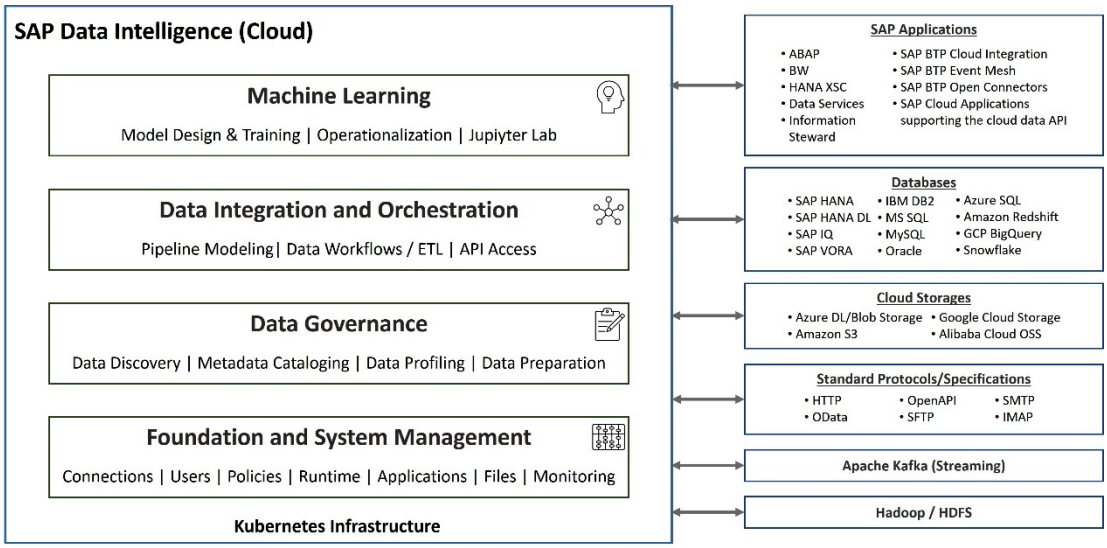

On-premise/IaaS
S/4HANA
SAP Business Technology Platform
SAP Document and
Reporting Compliance
service
HMRC
(UK's tax authority)

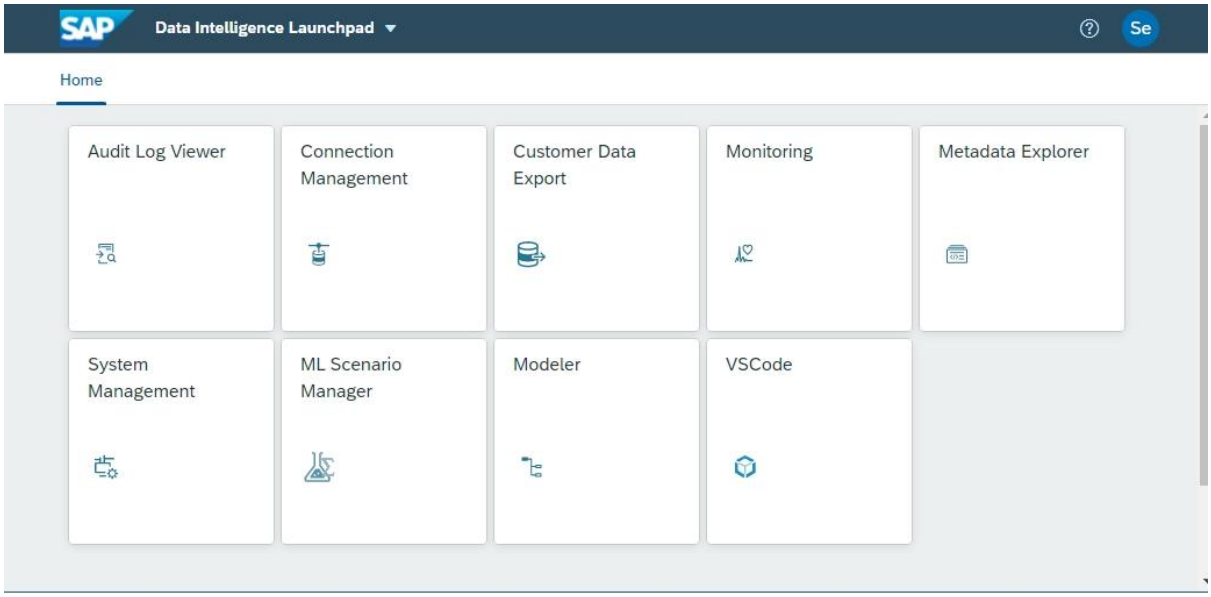

On-premise/IaaS
Firewall
SAP Business Technology Platform
SMTP
S/4HANA
MQTT
Event Mesh
Cloud
Integration
Open
Connectors
HTTPS
slack
Application
(CAP)
Mail Server
Secure Tunnel
HTTPS
Cloud
Connector
Connectivity
API Management
HTTPS
Third-party service
supplier
SMTP

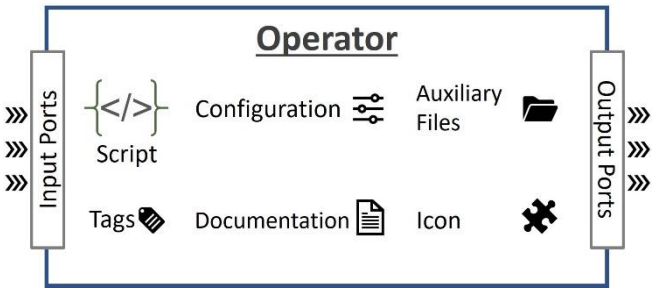

SAP API Business Hub
Explore
Resources
Discover Integrations
Partner with Us
New SAP API Business Hub
Hi Serdar
Overview
Event References
Changed
Created
POST
/sap.s4.beh.businesspartner.v1.BusinessPartner.Created.v1
Business Partner Created
This event is raised when a business partner record is created.
Parameters
No parameters
Request body
application/json
Example Value
Schema
{
"specversion": "string",
"type": "string",
"source": "string",
"subject": "string",
"id": "string",
"time": "2022-02-21T18:19:38.585Z",
"datacontenttype": "string",
"data": {
"BusinessPartner": "string"
}
}
FEEDBACK

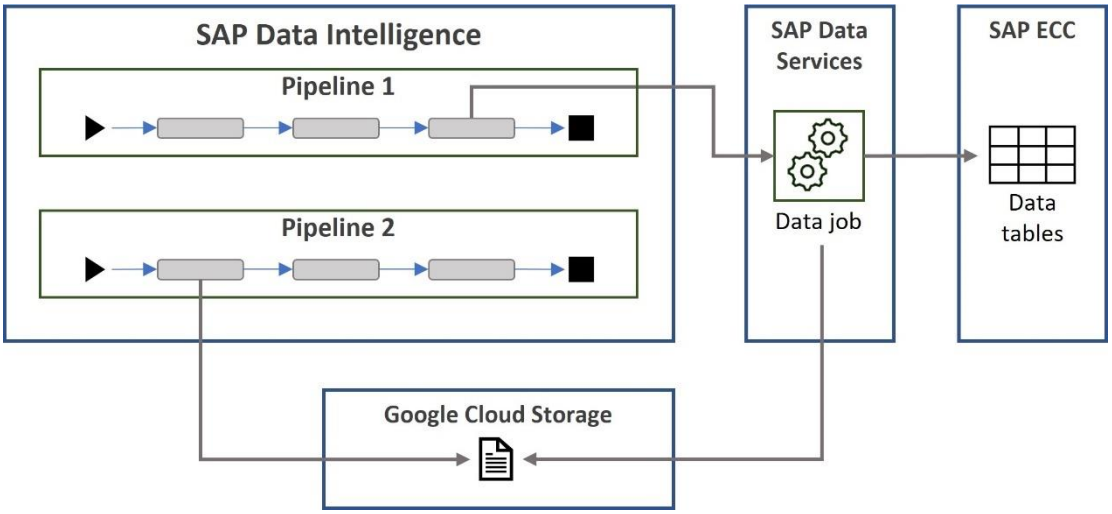
Chapter 8: Data Integration

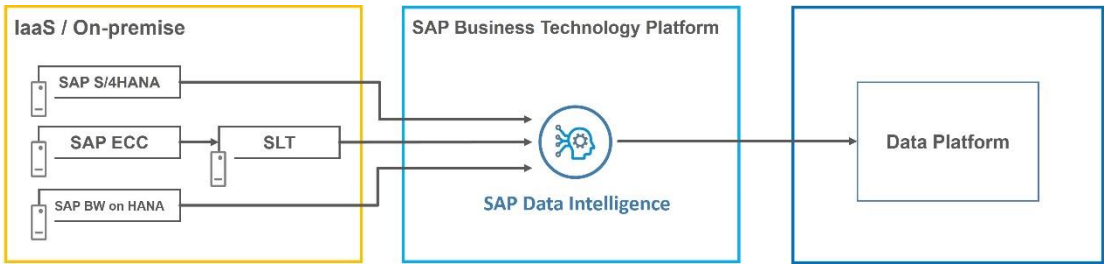




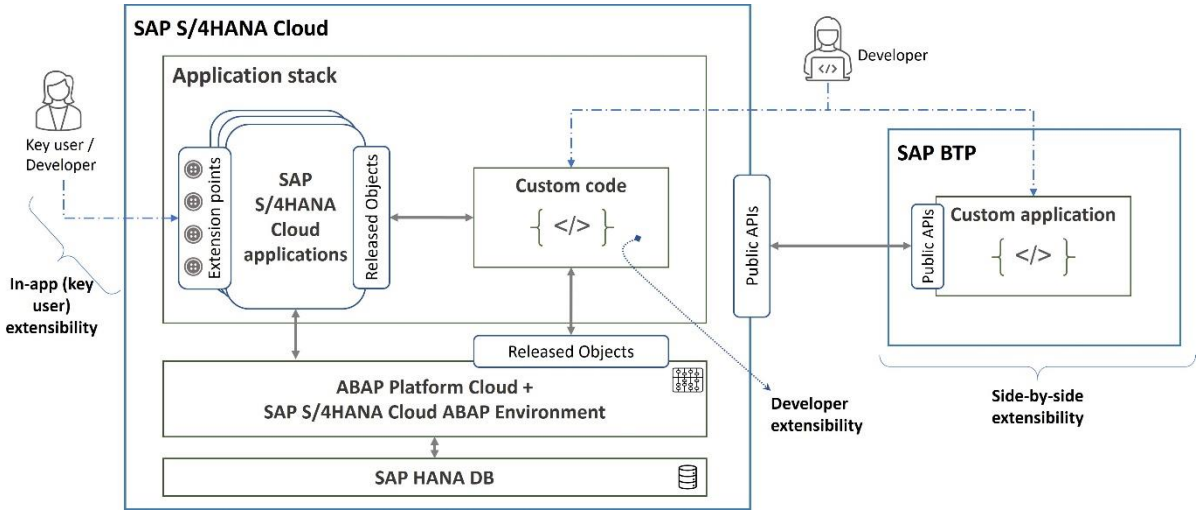

SAP
Data Intelligence Launchpad
Se
Home
Audit Log Viewer
Connection Management
Customer Data Export
Monitoring
Metadata Explorer
System Management
ML Scenario Manager
Modeler
VSCode

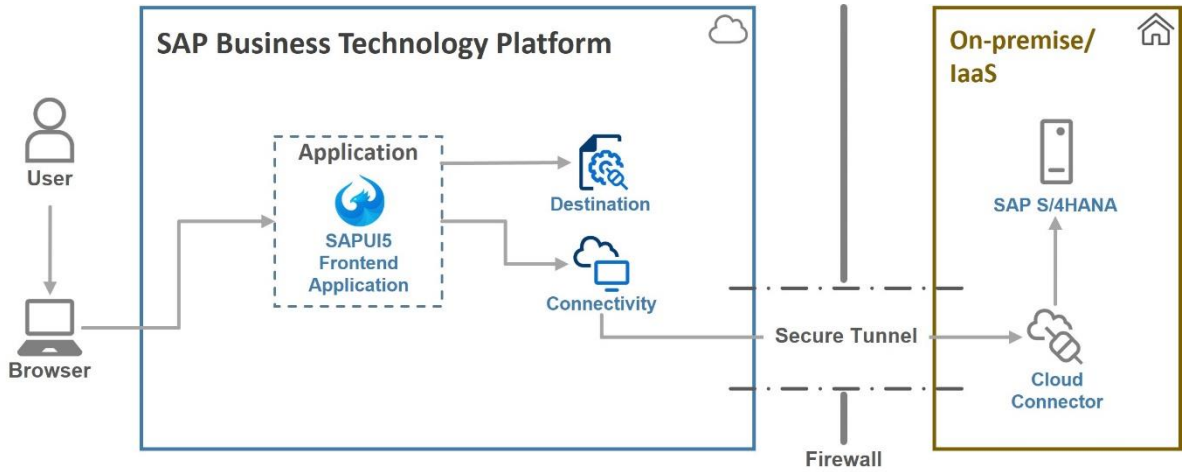

Operator
Input Ports
Output Ports
Script
Configuration
Auxiliary Files
Tags
Documentation
Icon

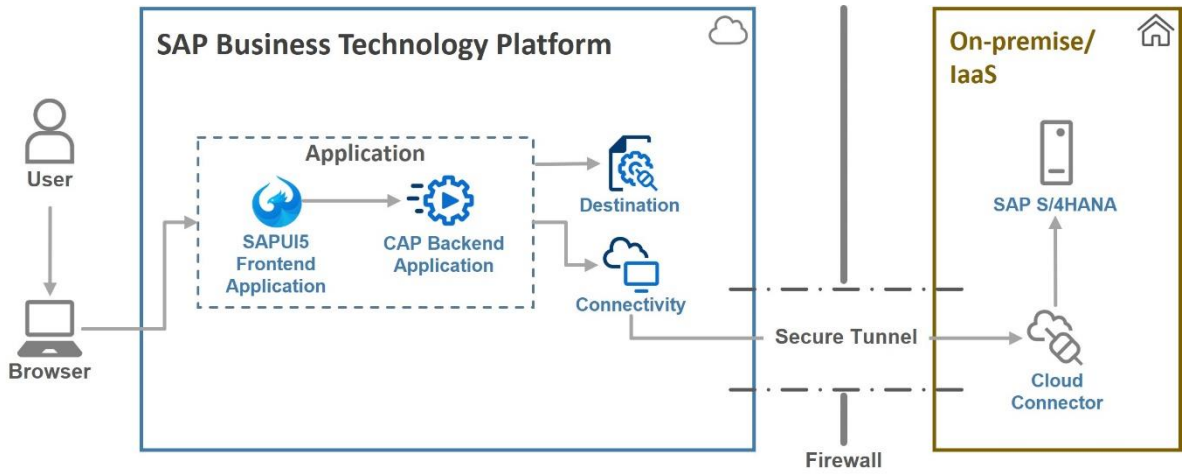

SAP Data Intelligence
Pipeline 1
Pipeline 2
SAP Data Services
Data job
SAP ECC
Data tables
Google Cloud Storage

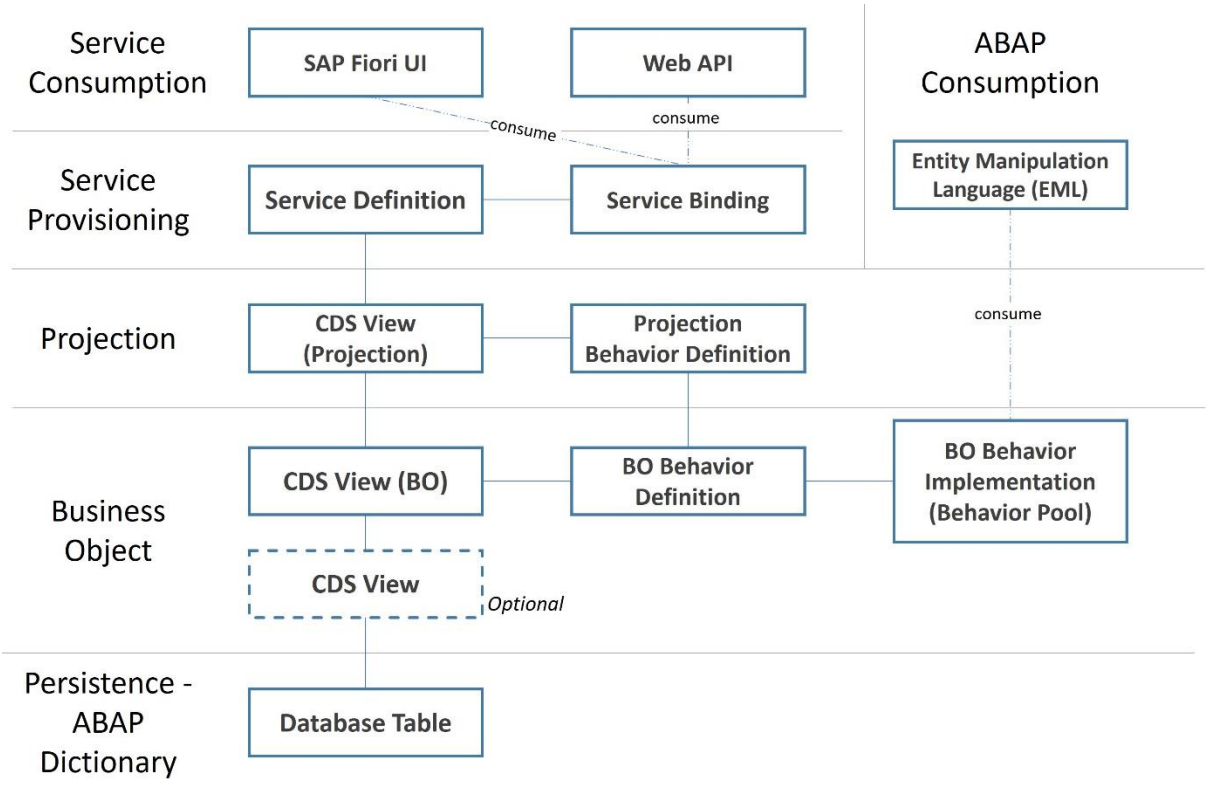

IaaS / On-premise
SAP S/4HANA
SAP ECC
SLT
SAP BW on HANA
SAP Business Technology Platform
SAP Data Intelligence
Data Platform

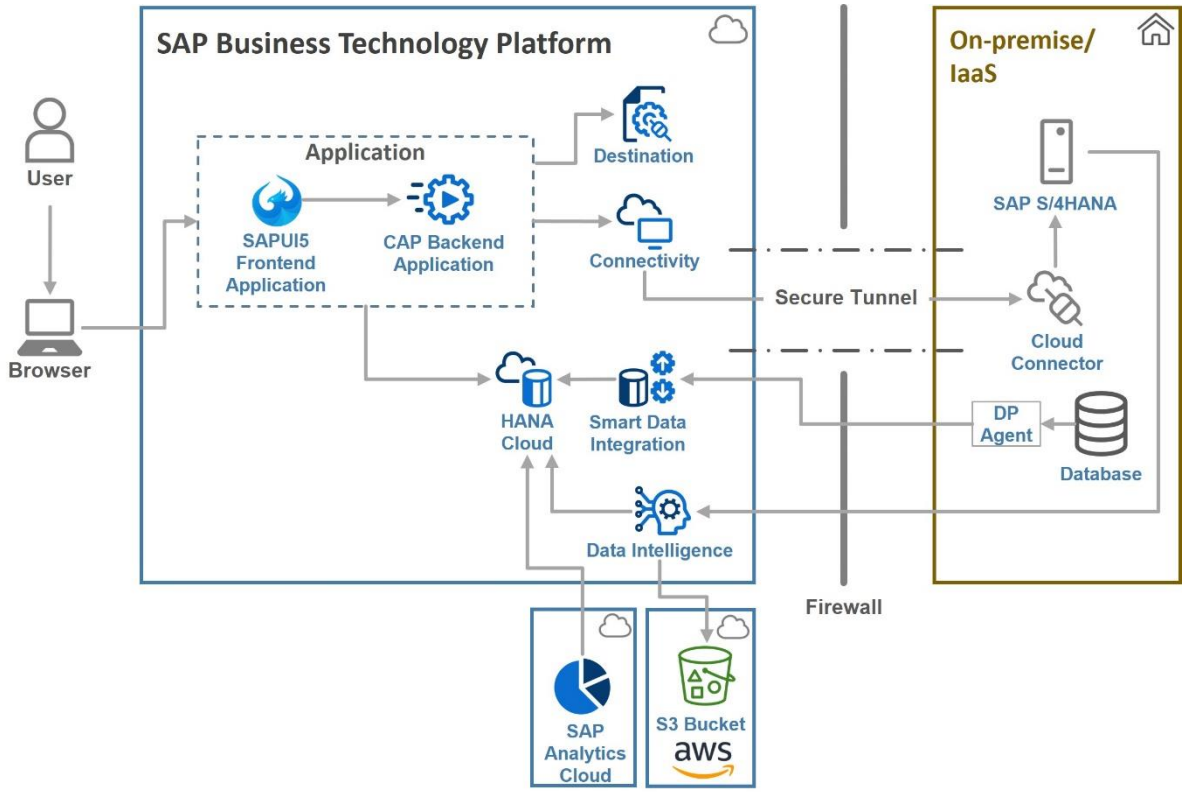
Chapter 9: Application Development



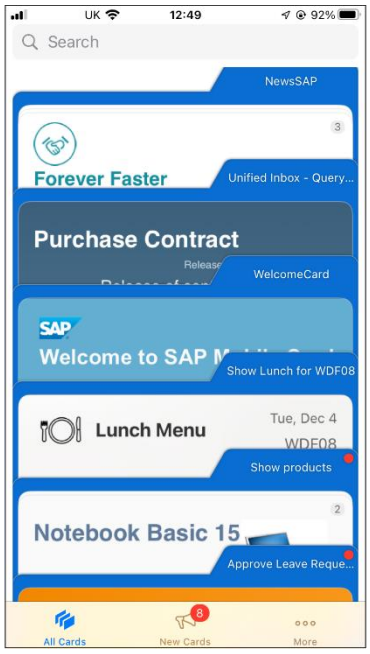


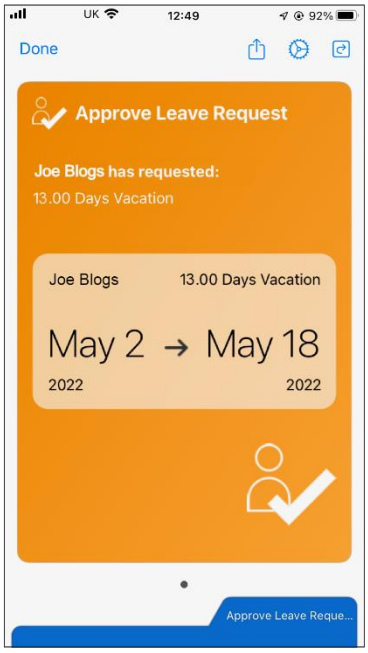


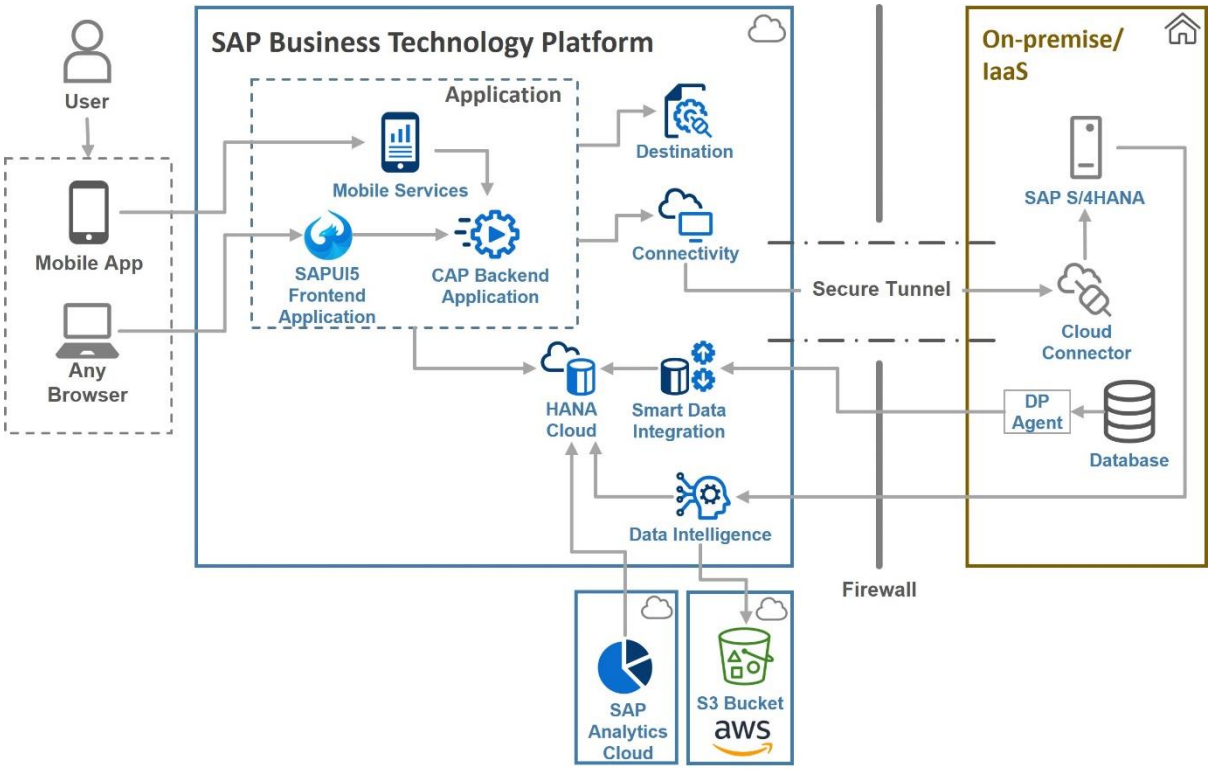

Service Consumption
SAP Fiori UI
Web API
consume
consume
ABAP Consumption
Entity Manipulation Language (EML)
Service Provisioning
Service Definition
Service Binding
Projection
CDS View (Projection)
Projection Behavior Definition
consume
Business Object
CDS View (BO)
BO Behavior Definition
BO Behavior Implementation (Behavior Pool)
CDS View
Optional
Persistence - ABAP Dictionary
Database Table

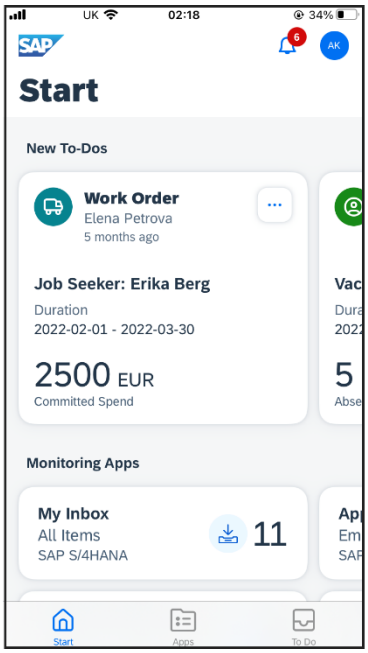

SAP Business Technology Platform
On-premise/ IaaS
User
Application
Destination
SAPUI5 Frontend Application
CAP Backend Application
Connectivity
SAP S/4HANA
Secure Tunnel
Cloud Connector
Browser
HANA Cloud
Smart Data Integration
DP Agent
Database
Data Intelligence
Firewall
SAP Analytics Cloud
S3 Bucket
aws

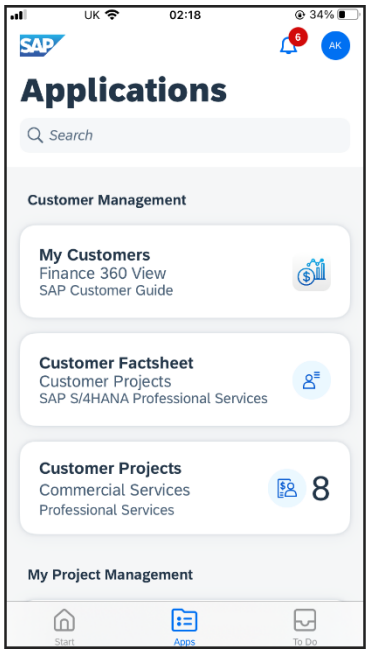
```
import { BusinessPartner } from '@sap/cloud-sdk-vdm-business-partner-service';
...
getBusinessPartners(): Promise<BusinessPartner[]> {
    return BusinessPartner.requestBuilder()
      .getAll()
      .top(10)
      .select(
        BusinessPartner.BUSINESS_PARTNER,
        BusinessPartner.FIRST_NAME,
        BusinessPartner.LAST_NAME,
        BusinessPartner.TO_BUSINESS_PARTNER_ADDRESS.select(
          BusinessPartnerAddress.BUSINESS_PARTNER,
          BusinessPartnerAddress.COUNTRY
        )
      )
      .filter(
        BusinessPartner.BUSINESS_PARTNER_CATEGORY.equals('1')
      )
      .execute({
        destinationName: 's4hc01'
      });
}
```

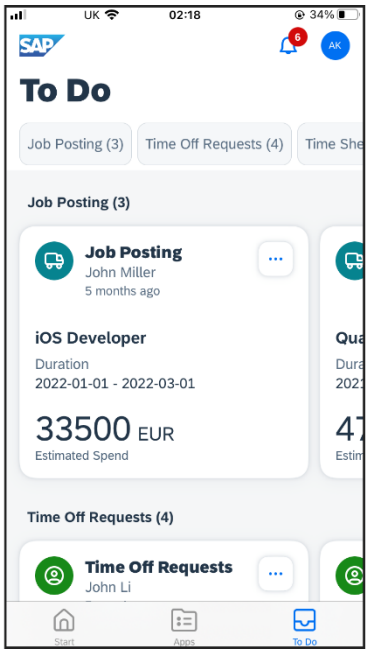


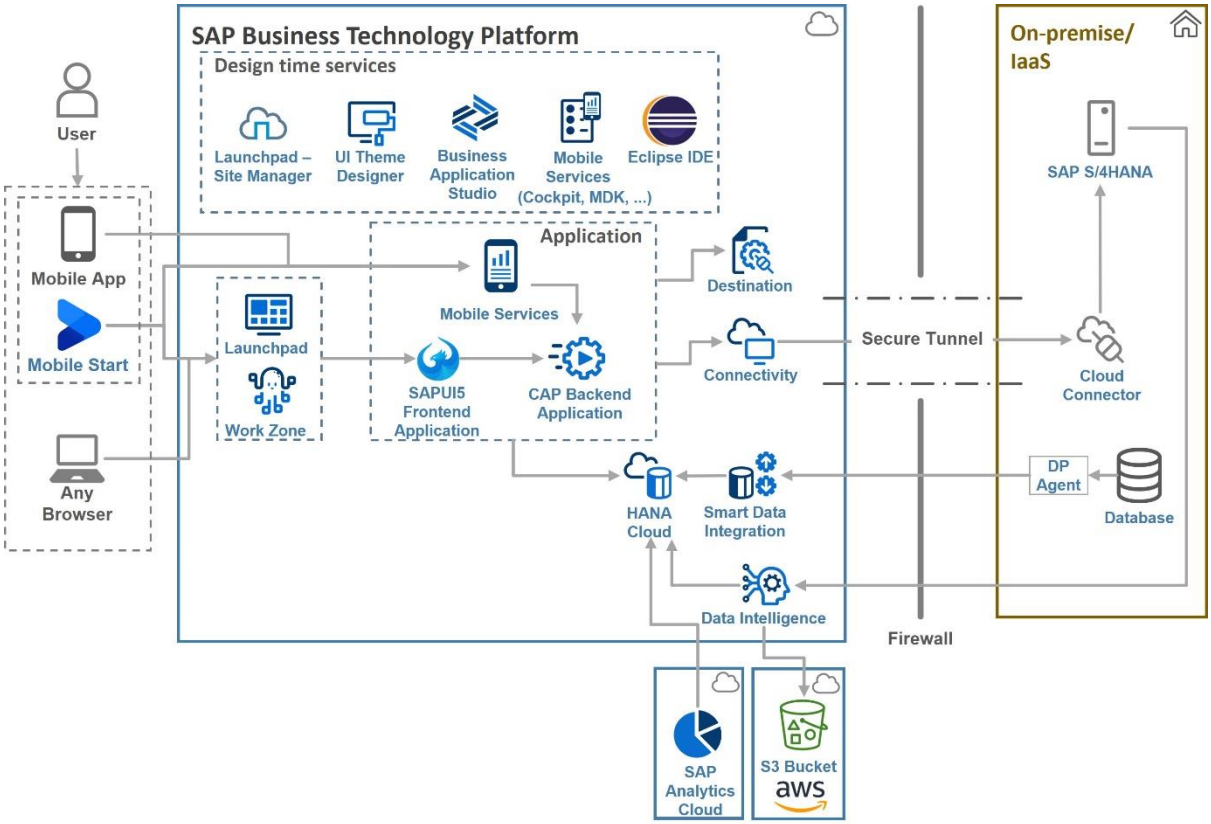


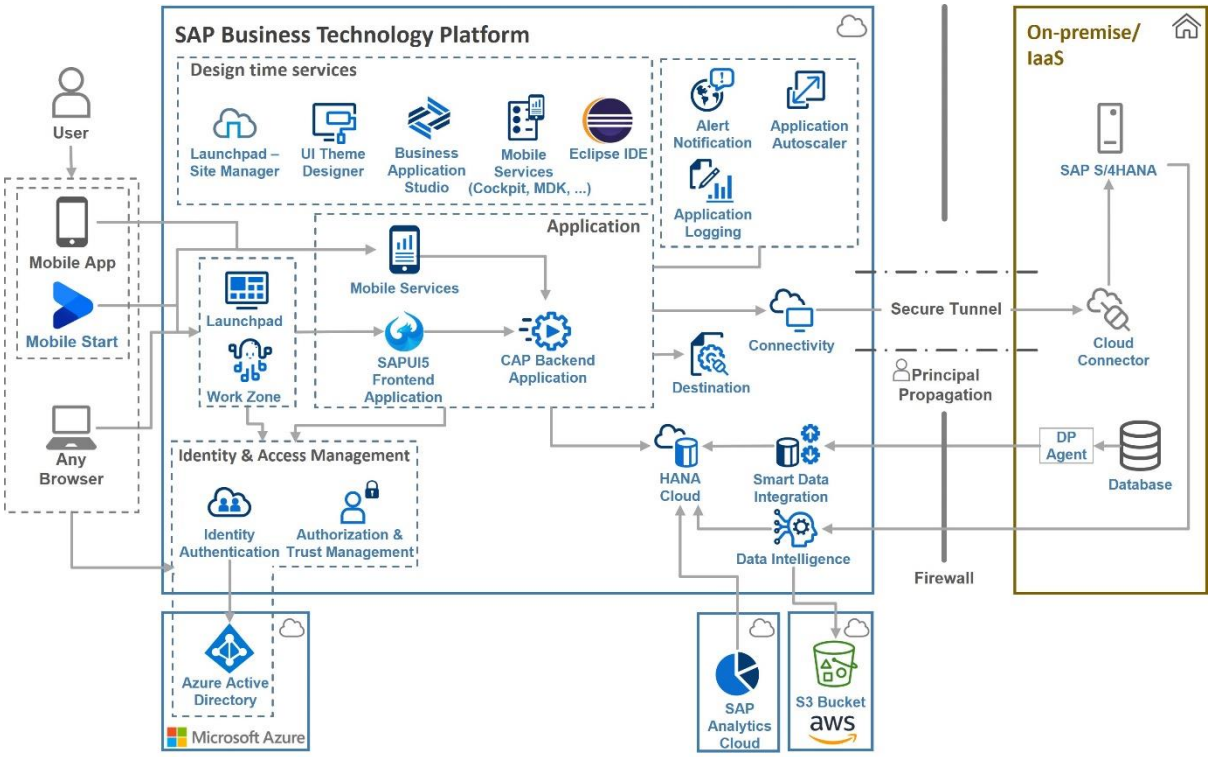

User
Mobile App
Any Browser
SAP Business Technology Platform
Application
Mobile Services
SAPUI5 Frontend Application
CAP Backend Application
Destination
Connectivity
HANA Cloud
Smart Data Integration
Data Intelligence
SAP Analytics Cloud
S3 Bucket
aws
Secure Tunnel
Firewall
On-premise/ IaaS
SAP S/4HANA
Cloud Connector
DP Agent
Database

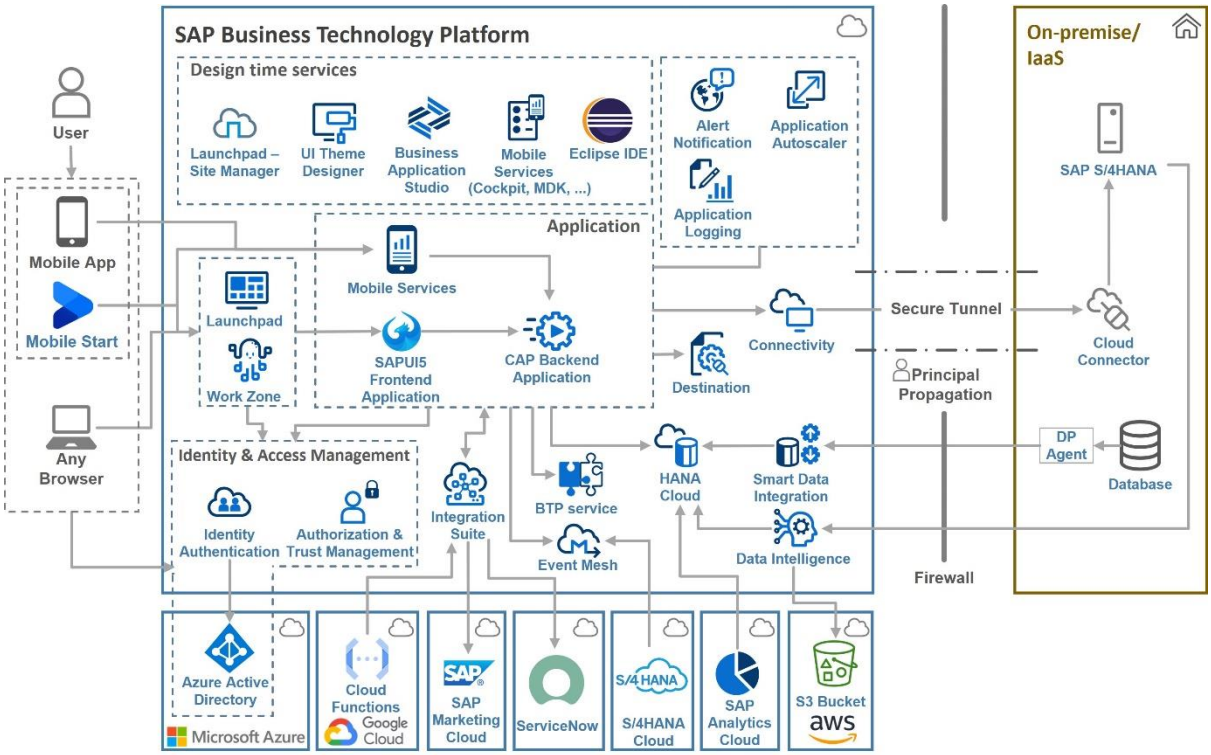

Start
New To-Dos
Work Order
Elena Petrova
5 months ago
Job Seeker: Erika Berg
Duration
2022-02-01 - 2022-03-30
2500 EUR
Committed Spend
Monitoring Apps
My Inbox
All Items
SAP S/4HANA
11

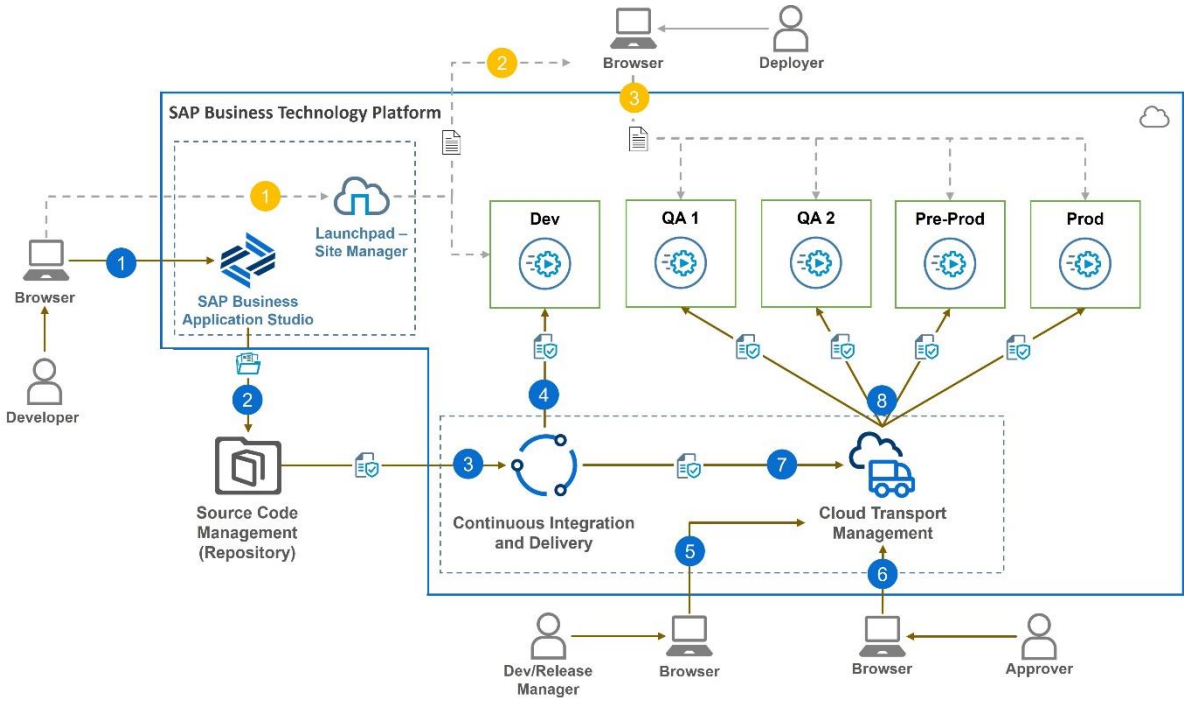

Applications
Search
Customer Management
My Customers
Finance 360 View
SAP Customer Guide
Customer Factsheet
Customer Projects
SAP S/4HANA Professional Services
Customer Projects
Commercial Services
Professional Services
8
My Project Management

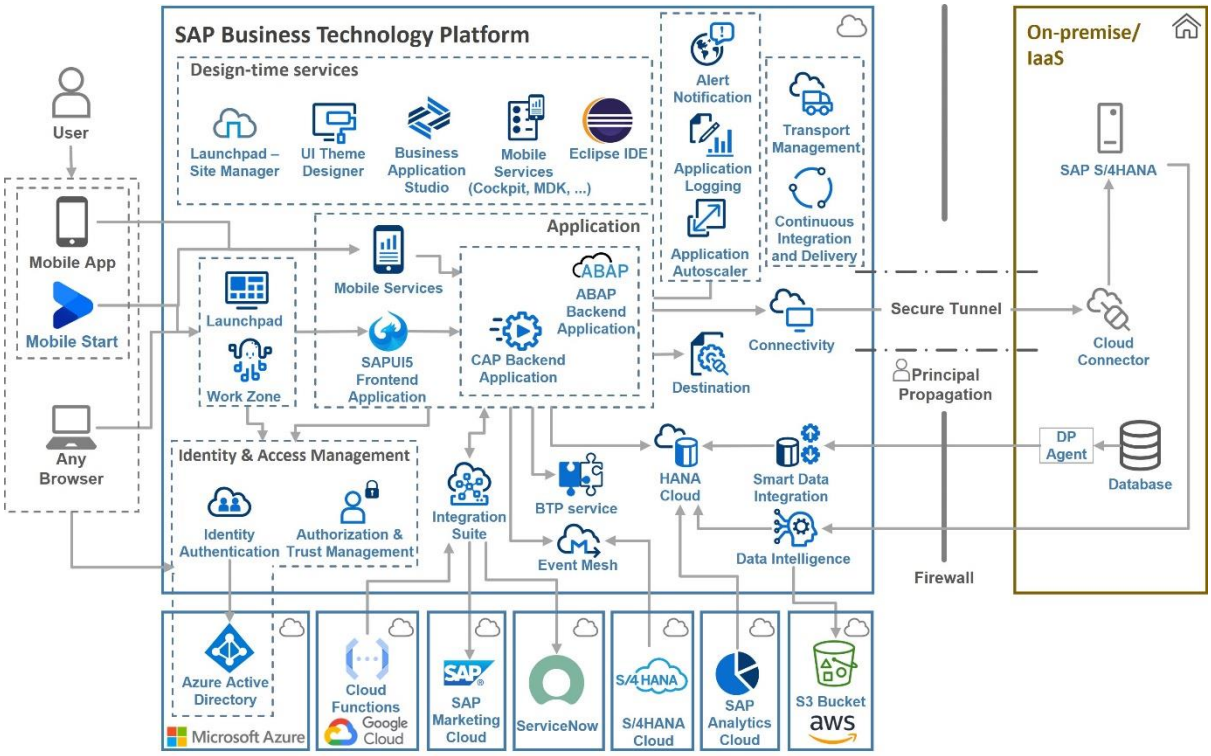

To Do
Job Posting (3)
Time Off Requests (4)
Job Posting
John Miller
5 months ago
iOS Developer
Duration
2022-01-01 - 2022-03-01
33500 EUR
Estimated Spend
Time Off Requests
John Li


SAP Business Technology Platform
Design time services
Launchpad – Site Manager
UI Theme Designer
Business Application Studio
Mobile Services (Cockpit, MDK, ...)
Eclipse IDE
User
Mobile App
Mobile Start
Any Browser
Application
Mobile Services
Launchpad
Work Zone
SAPUI5 Frontend Application
CAP Backend Application
Destination
Connectivity
Secure Tunnel
On-premise/ IaaS
SAP S/4HANA
Cloud Connector
DP Agent
Database
HANA Cloud
Smart Data Integration
Data Intelligence
Firewall
SAP Analytics Cloud
S3 Bucket
aws

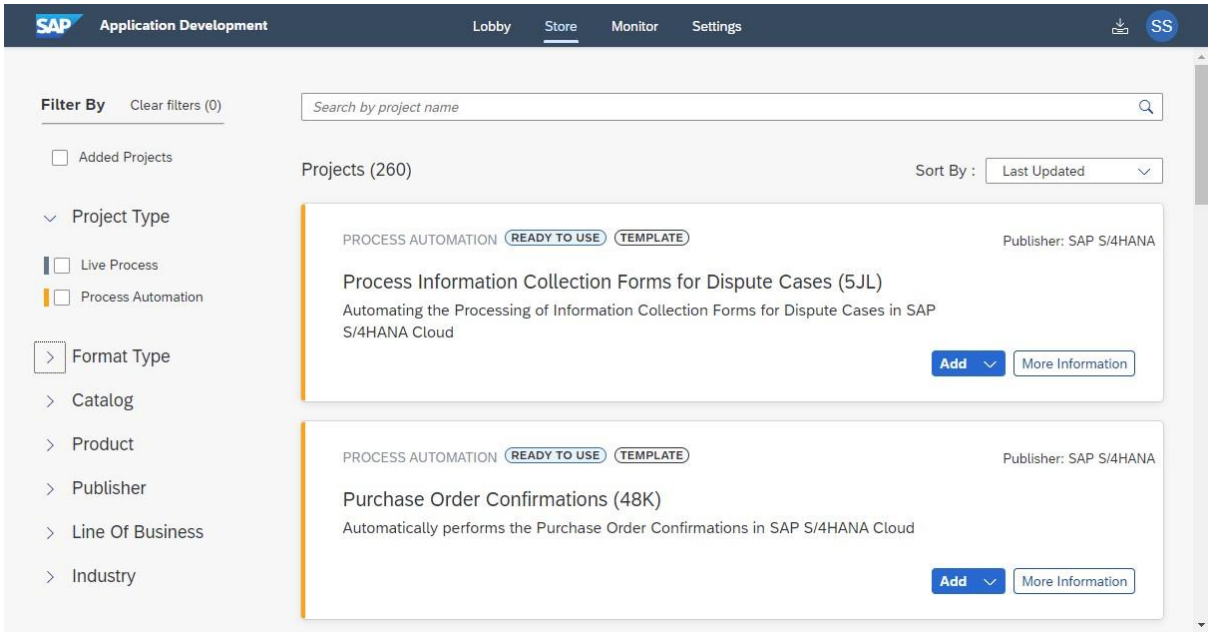

SAP Business Technology Platform
Design time services
Launchpad – Site Manager
UI Theme Designer
Business Application Studio
Mobile Services (Cockpit, MDK, ...)
Eclipse IDE
Alert Notification
Application Autoscaler
Application Logging
User
Mobile App
Mobile Start
Any Browser
Application
Mobile Services
Launchpad
Work Zone
SAPUI5 Frontend Application
CAP Backend Application
Destination
Connectivity
Secure Tunnel
Principal Propagation
On-premise/ IaaS
SAP S/4HANA
Cloud Connector
DP Agent
Database
Identity & Access Management
Identity Authentication
Authorization & Trust Management
HANA Cloud
Smart Data Integration
Data Intelligence
Firewall
Azure Active Directory
Microsoft Azure
SAP Analytics Cloud
S3 Bucket
aws

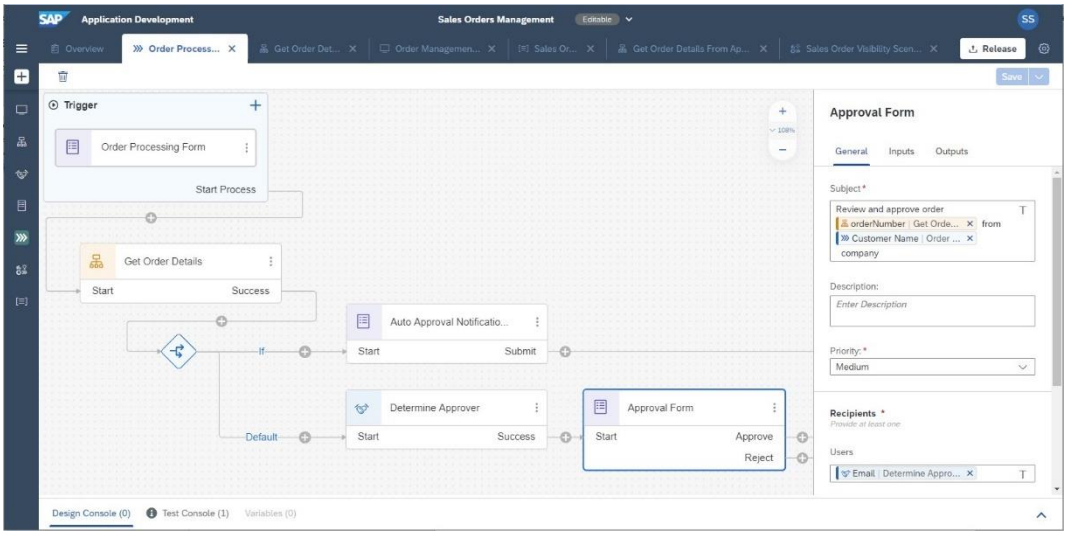

SAP Business Technology Platform
Design time services
Launchpad – Site Manager
UI Theme Designer
Business Application Studio
Mobile Services (Cockpit, MDK, ...)
Eclipse IDE
Alert Notification
Application Autoscaler
Application Logging
Application
Mobile Services
Launchpad
Work Zone
SAPUI5 Frontend Application
CAP Backend Application
Connectivity
Destination
Secure Tunnel
Principal Propagation
Firewall
On-premise/ IaaS
SAP S/4HANA
Cloud Connector
DP Agent
Database
User
Mobile App
Mobile Start
Any Browser
Identity & Access Management
Identity Authentication
Authorization & Trust Management
Integration Suite
BTP service
Event Mesh
HANA Cloud
Smart Data Integration
Data Intelligence
Azure Active Directory
Microsoft Azure
Cloud Functions
Google Cloud
SAP Marketing Cloud
ServiceNow
S/4HANA Cloud
SAP Analytics Cloud
S3 Bucket
aws

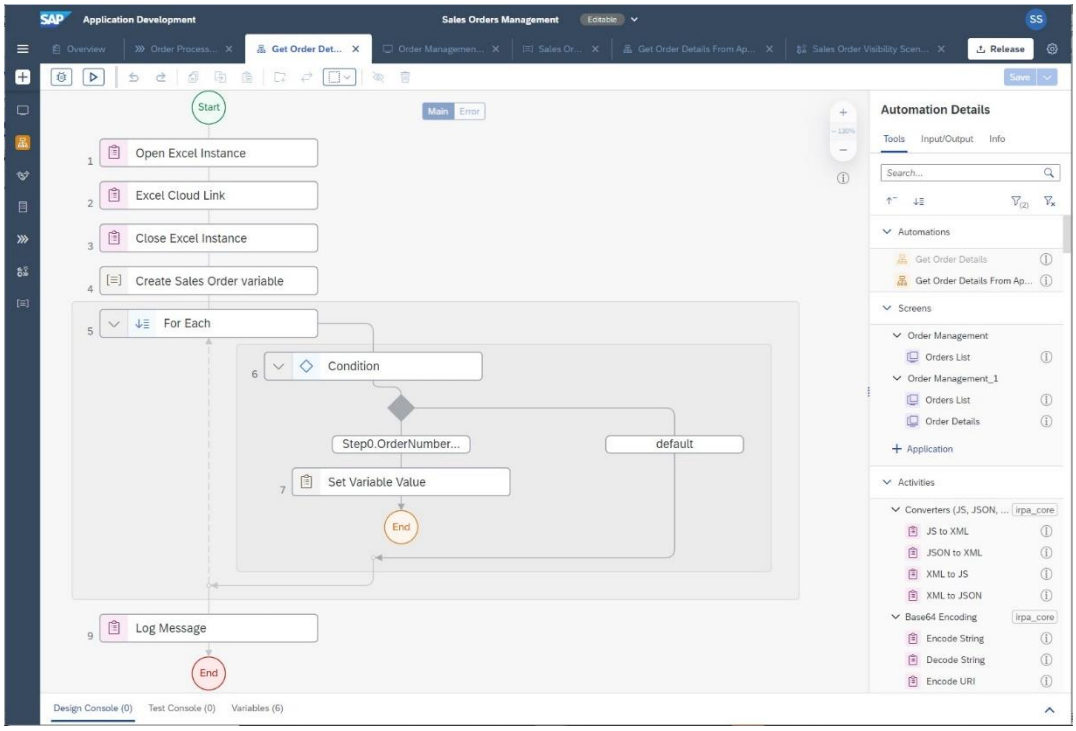

Browser
Deployer
SAP Business Technology Platform
Launchpad – Site Manager
Browser
SAP Business Application Studio
Developer
Source Code Management (Repository)
Continuous Integration and Delivery
Cloud Transport Management
Dev
QA 1
QA 2
Pre-Prod
Prod
Dev/Release Manager
Browser
Browser
Approver

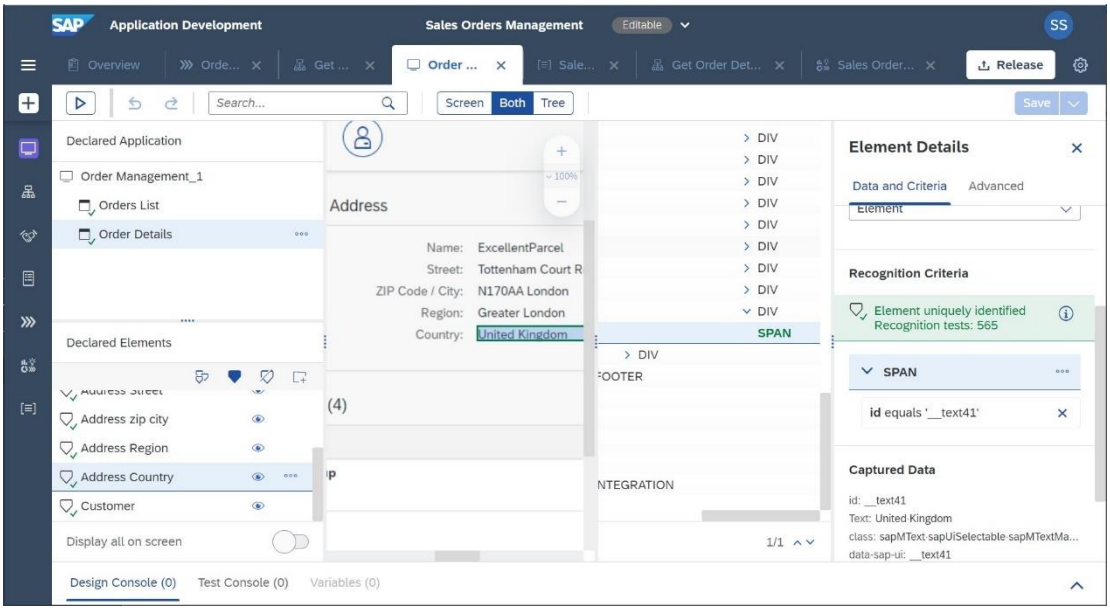

SAP Business Technology Platform
Design-time services
Launchpad – Site Manager
UI Theme Designer
Business Application Studio
Mobile Services (Cockpit, MDK, ...)
Eclipse IDE
Application
Mobile Services
ABAP
ABAP Backend Application
Launchpad
Work Zone
SAPUI5 Frontend Application
CAP Backend Application
Identity & Access Management
Identity Authentication
Authorization & Trust Management
Integration Suite
BTP service
Event Mesh
Alert Notification
Application Logging
Application Autoscaler
Transport Management
Continuous Integration and Delivery
Connectivity
Destination
HANA Cloud
Smart Data Integration
Data Intelligence
User
Mobile App
Mobile Start
Any Browser
Secure Tunnel
Principal Propagation
Firewall
On-premise/ IaaS
SAP S/4HANA
Cloud Connector
DP Agent
Database
Azure Active Directory
Microsoft Azure
Cloud Functions
Google Cloud
SAP Marketing Cloud
ServiceNow
S/4HANA Cloud
SAP Analytics Cloud
S3 Bucket
aws

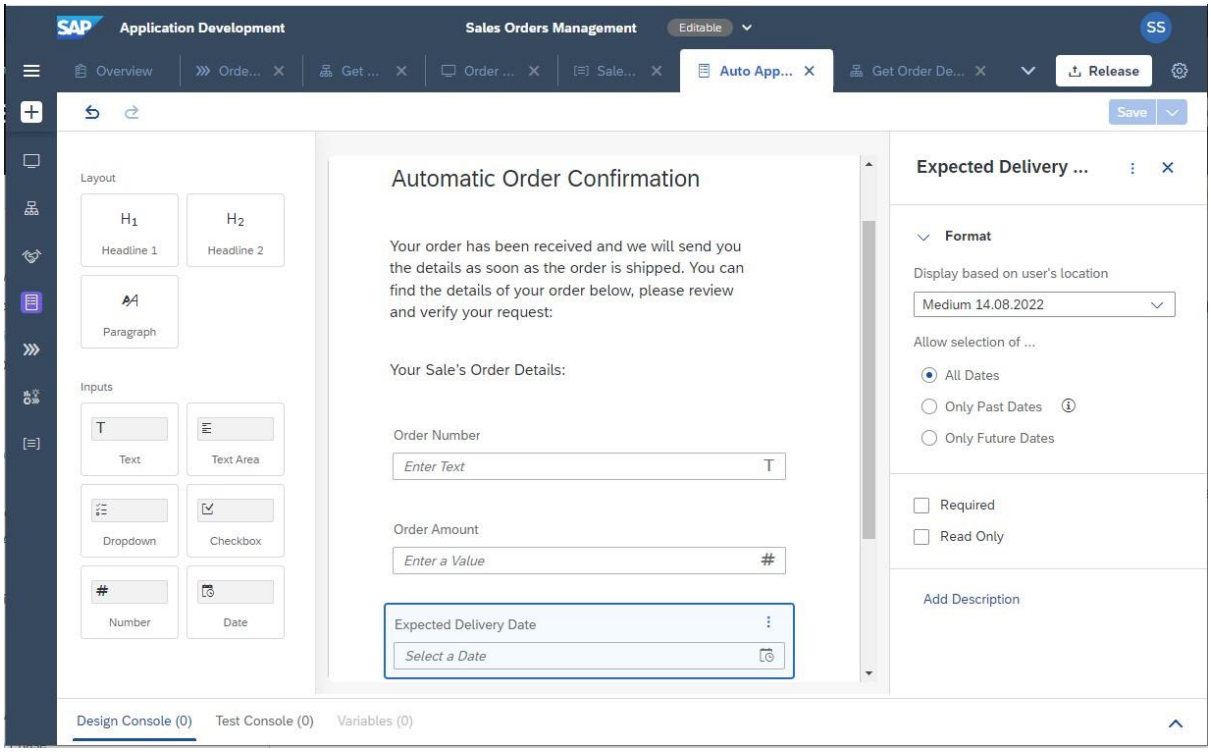
Chapter 10: Digital Process Automation

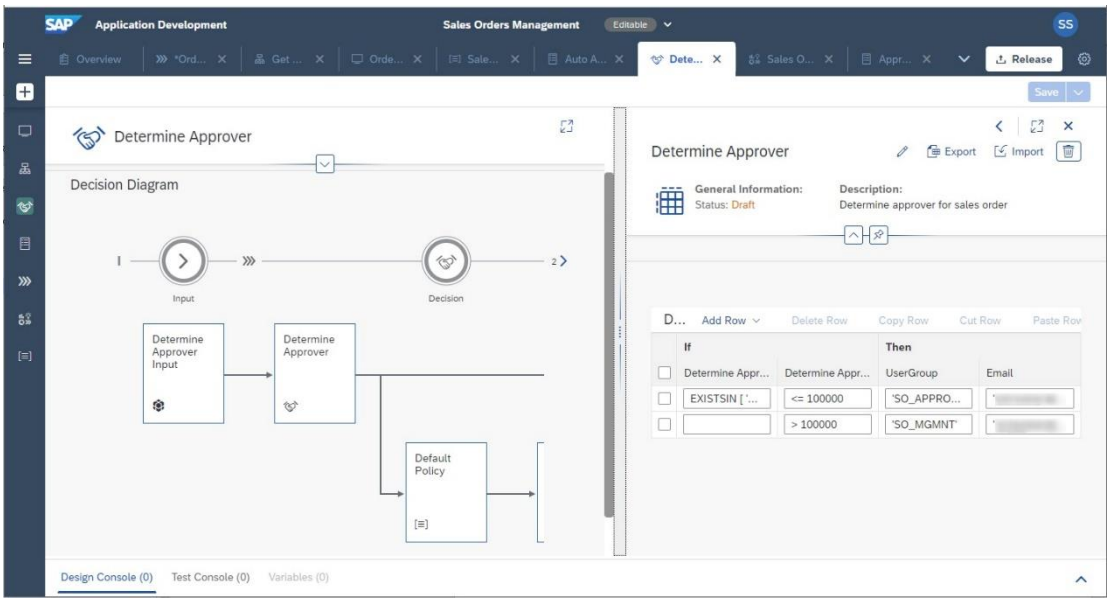


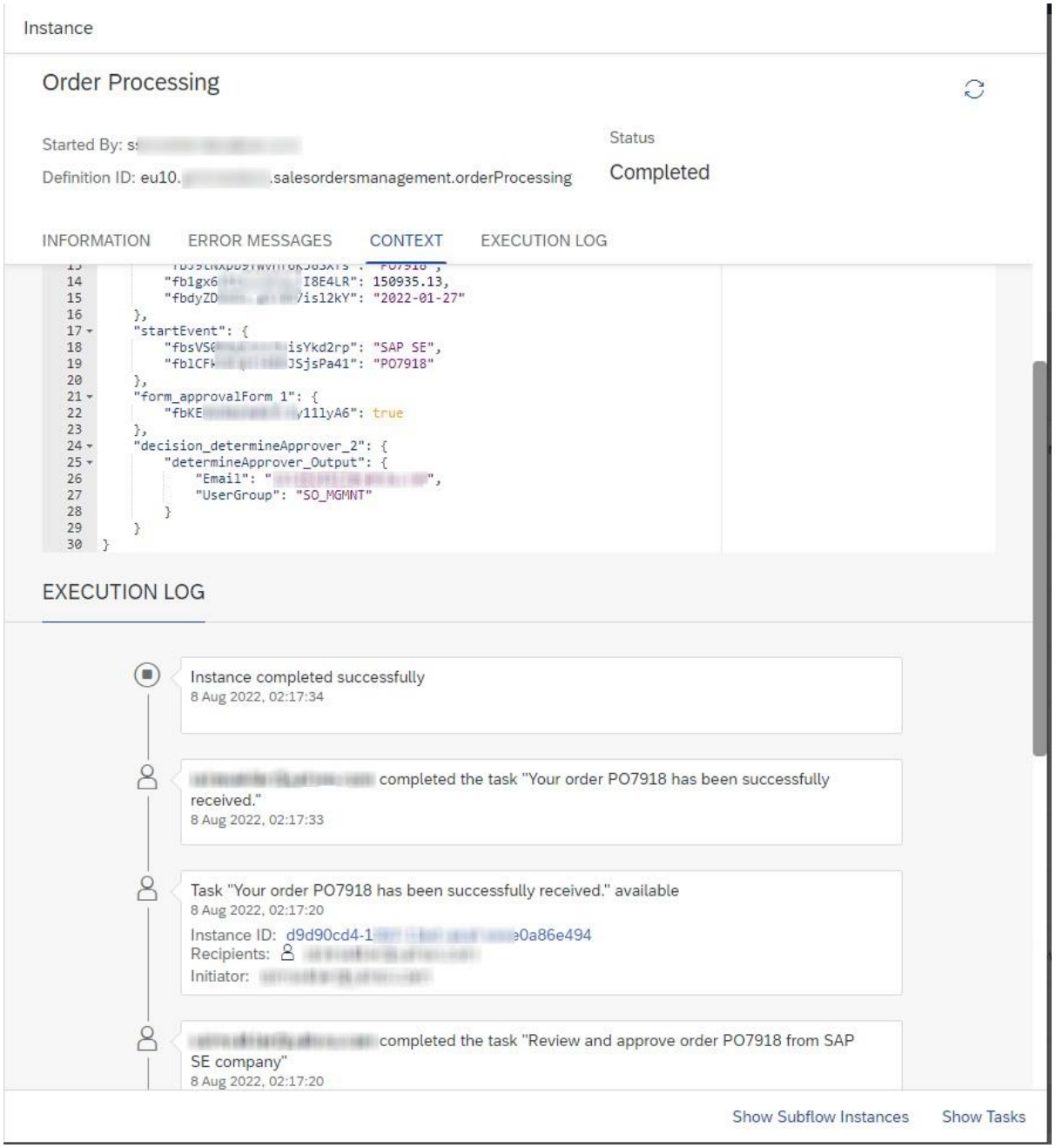


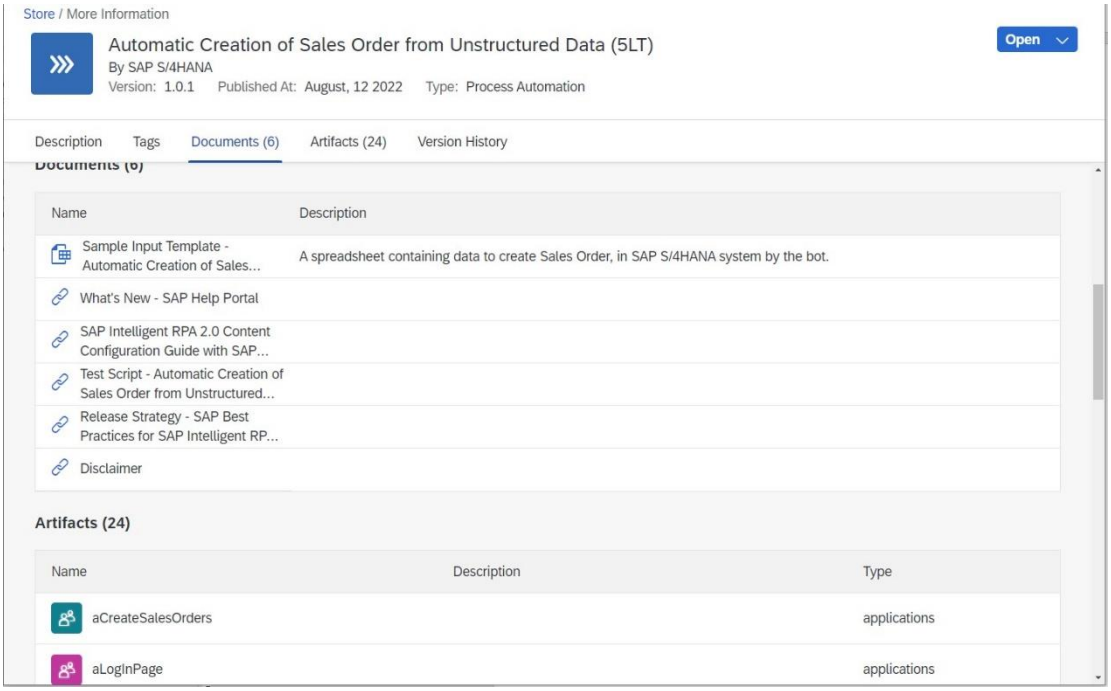

Application Development
Sales Orders Management
Editable
Release
Save
Start
Main
Error
1 Open Excel Instance
2 Excel Cloud Link
3 Close Excel Instance
4 Create Sales Order variable
5 For Each
6 Condition
Step0.OrderNumber...
default
7 Set Variable Value
End
9 Log Message
End
Automation Details
Tools
Input/Output
Info
Search...
Automations
Get Order Details
Get Order Details From Ap...
Screens
Order Management
Orders List
Order Management_1
Orders List
Order Details
Application
Activities
Converters (JS, JSON, ...
irpa_core
JS to XML
JSON to XML
XML to JS
XML to JSON
Base64 Encoding
irpa_core
Encode String
Decode String
Encode URI
Design Console (0)
Test Console (0)
Variables (6)


Application Development
Sales Orders Management
Editable
Overview
Order ...
Release
Save
Search...
Screen
Both
Tree
Declared Application
Order Management_1
Orders List
Order Details
Declared Elements
Address zip city
Address Region
Address Country
Customer
Display all on screen
Address
Name: ExcellentParcel
Street: Tottenham Court R
ZIP Code / City: N170AA London
Region: Greater London
Country: United Kingdom
(4)
DIV
SPAN
Element Details
Data and Criteria
Advanced
Element
Recognition Criteria
Element uniquely identified
Recognition tests: 565
SPAN
id equals '__text41'
Captured Data
id: __text41
Text: United Kingdom
class: sapMText sapUiSelectable sapMTextMa...
data-sap-ui: __text41
Design Console (0)
Test Console (0)
Variables (0)

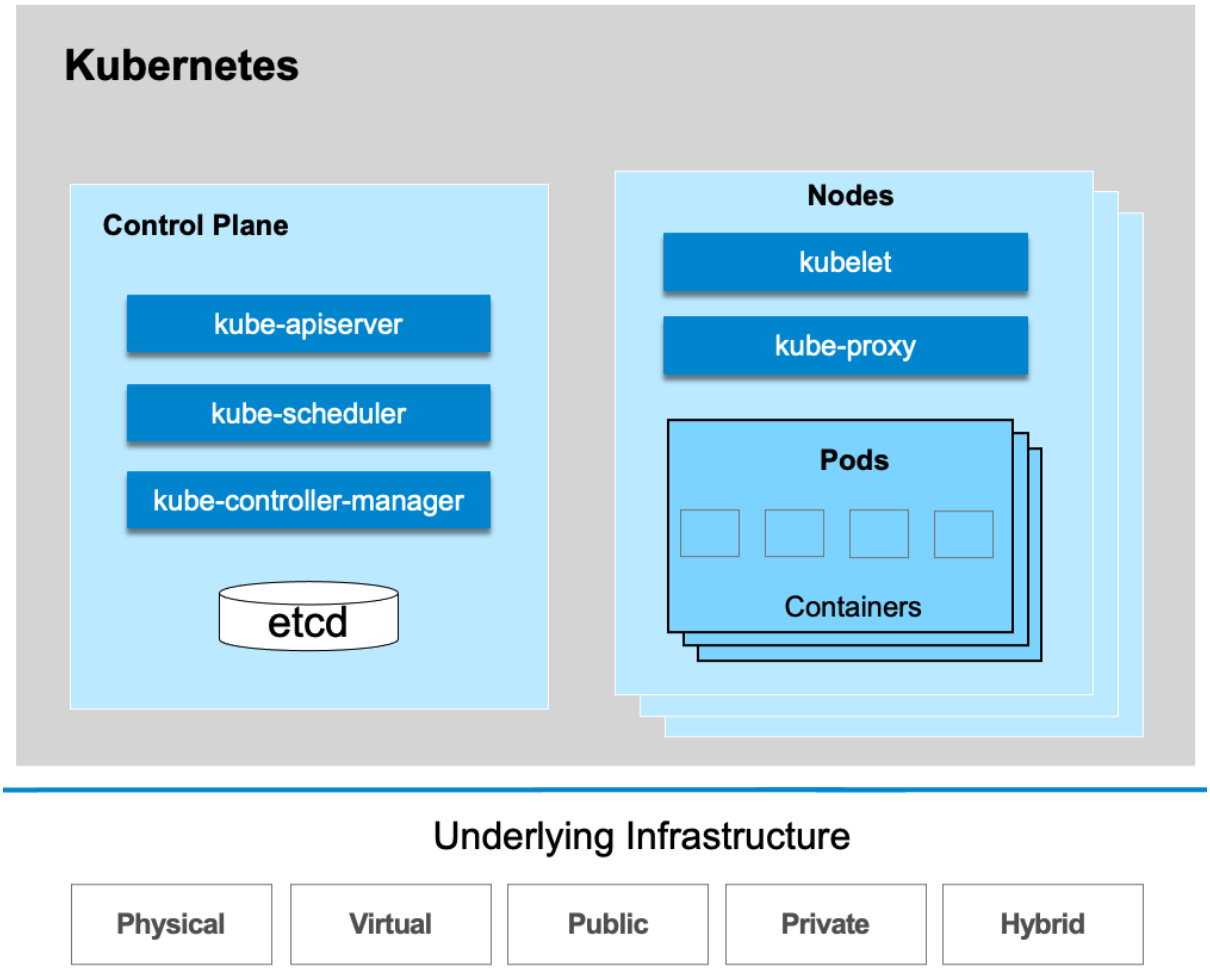

Application Development
Sales Orders Management
Editable
Release
Save
Layout
Headline 1
Headline 2
Paragraph
Inputs
Text
Text Area
Dropdown
Checkbox
Number
Date
Automatic Order Confirmation
Your order has been received and we will send you the details as soon as the order is shipped. You can find the details of your order below, please review and verify your request:
Your Sale's Order Details:
Order Number
Enter Text
Order Amount
Enter a Value
Expected Delivery Date
Select a Date
Expected Delivery ...
Format
Display based on user's location
Medium 14.08.2022
Allow selection of ...
All Dates
Only Past Dates
Only Future Dates
Required
Read Only
Add Description
Design Console (0)
Test Console (0)
Variables (0)

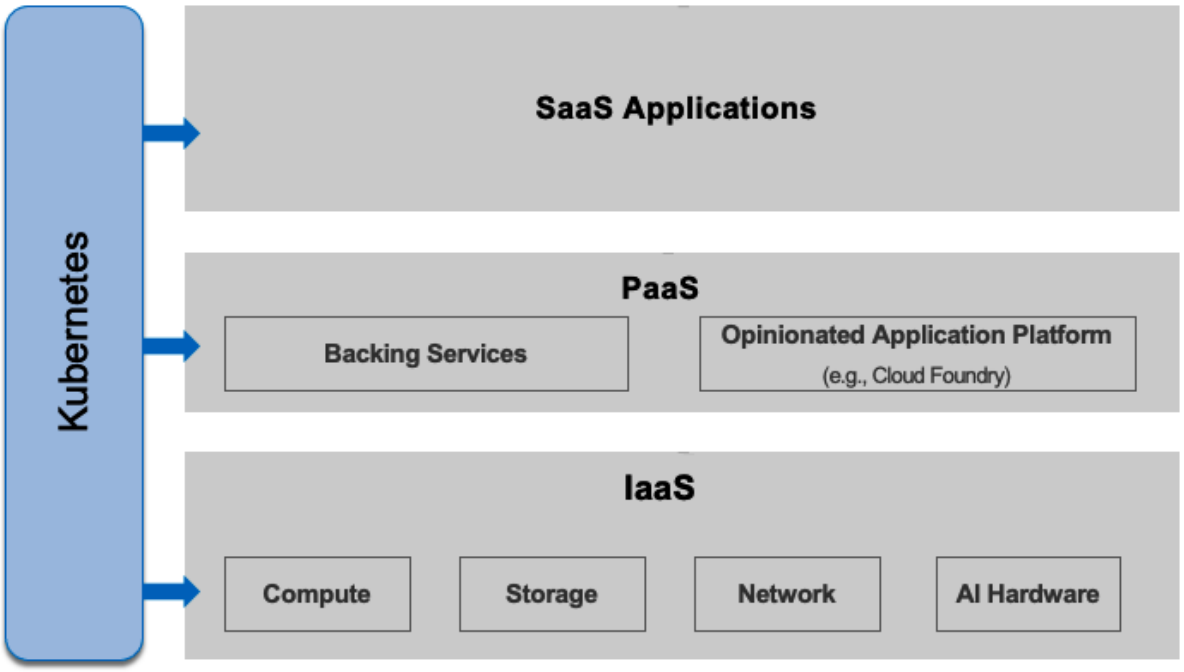

Application Development
Sales Orders Management
Editable
Release
Save
Determine Approver
Decision Diagram
Input
Decision
Determine Approver Input
Determine Approver
Default Policy
Export
Import
General Information:
Status: Draft
Description:
Determine approver for sales order
Add Row
Delete Row
Copy Row
Cut Row
Paste Row
If
Then
Determine Appr...
Determine Appr...
UserGroup
Email
EXISTSIN ['...
<= 100000
'SO_APPRO...
> 100000
'SO_MGMNT'
Design Console (0)
Test Console (0)
Variables (0)

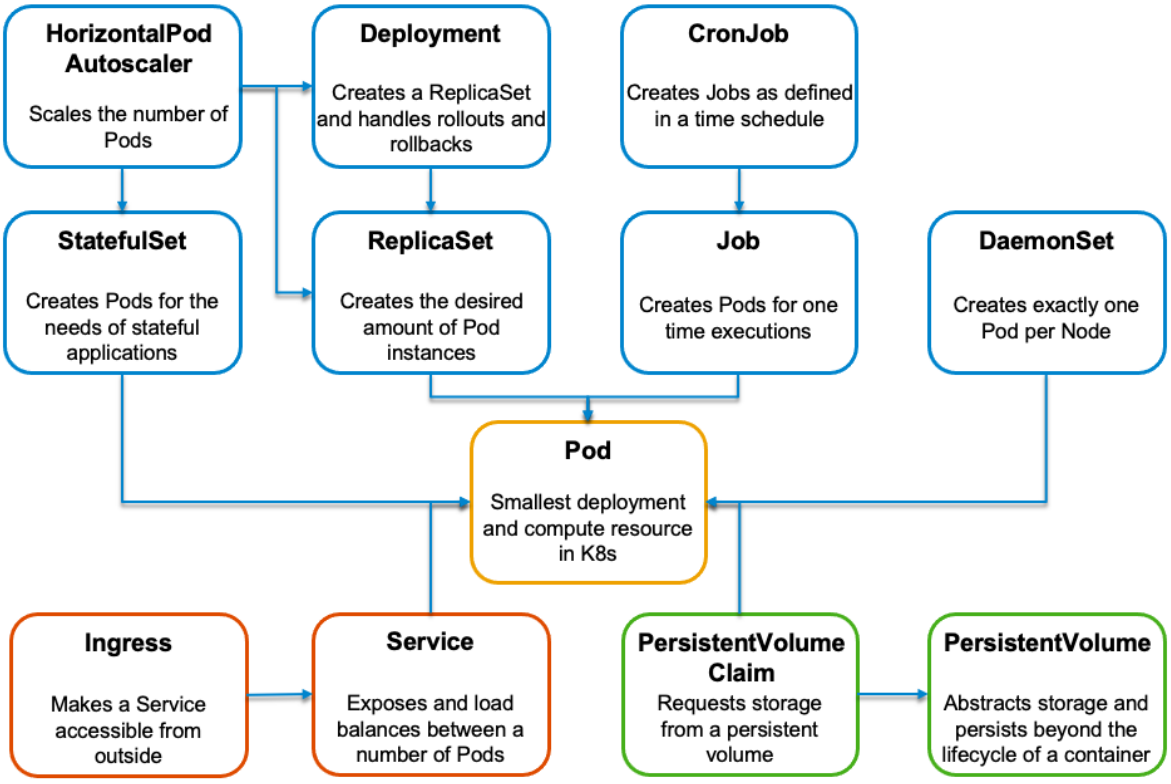

Instance
Order Processing
Started By: s
Definition ID: eu10. .salesordersmanagement.orderProcessing
Status
Completed
INFORMATION
ERROR MESSAGES
CONTEXT
EXECUTION LOG
"fb1gx6 I8E4LR": 150935.13,
"fbdyZD /isl2kY": "2022-01-27"
},
"startEvent": {
"fbsVSC isYkd2rp": "SAP SE",
"fb1CFk JSjsPa41": "PO7918"
},
"form_approvalForm 1": {
"fbKE y11lyA6": true
},
"decision_determineApprover_2": {
"determineApprover_Output": {
"Email": "
"UserGroup": "SO_MGMNT"
}
}
}
EXECUTION LOG
Instance completed successfully
8 Aug 2022, 02:17:34
completed the task "Your order PO7918 has been successfully received."
8 Aug 2022, 02:17:33
Task "Your order PO7918 has been successfully received." available
8 Aug 2022, 02:17:20
Instance ID: d9d90cd4-1 e0a86e494
Recipients:
Initiator:
completed the task "Review and approve order PO7918 from SAP SE company"
8 Aug 2022, 02:17:20
Show Subflow Instances
Show Tasks


Store / More Information
Automatic Creation of Sales Order from Unstructured Data (5LT)
By SAP S/4HANA
Version: 1.0.1 Published At: August, 12 2022 Type: Process Automation
Open
Description Tags Documents (6) Artifacts (24) Version History
Documents (6)
Name Description
Sample Input Template - Automatic Creation of Sales... A spreadsheet containing data to create Sales Order, in SAP S/4HANA system by the bot.
What's New - SAP Help Portal
SAP Intelligent RPA 2.0 Content Configuration Guide with SAP...
Test Script - Automatic Creation of Sales Order from Unstructured...
Release Strategy - SAP Best Practices for SAP Intelligent RP...
Disclaimer
Artifacts (24)
Name Description Type
aCreateSalesOrders applications
aLogInPage applications

Chapter 11: Containers and Kubernetes

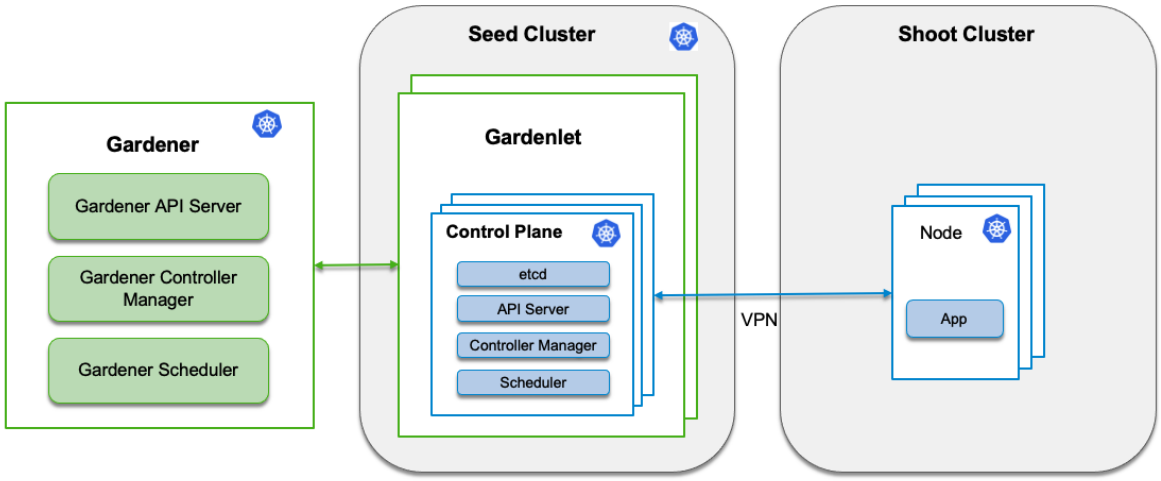


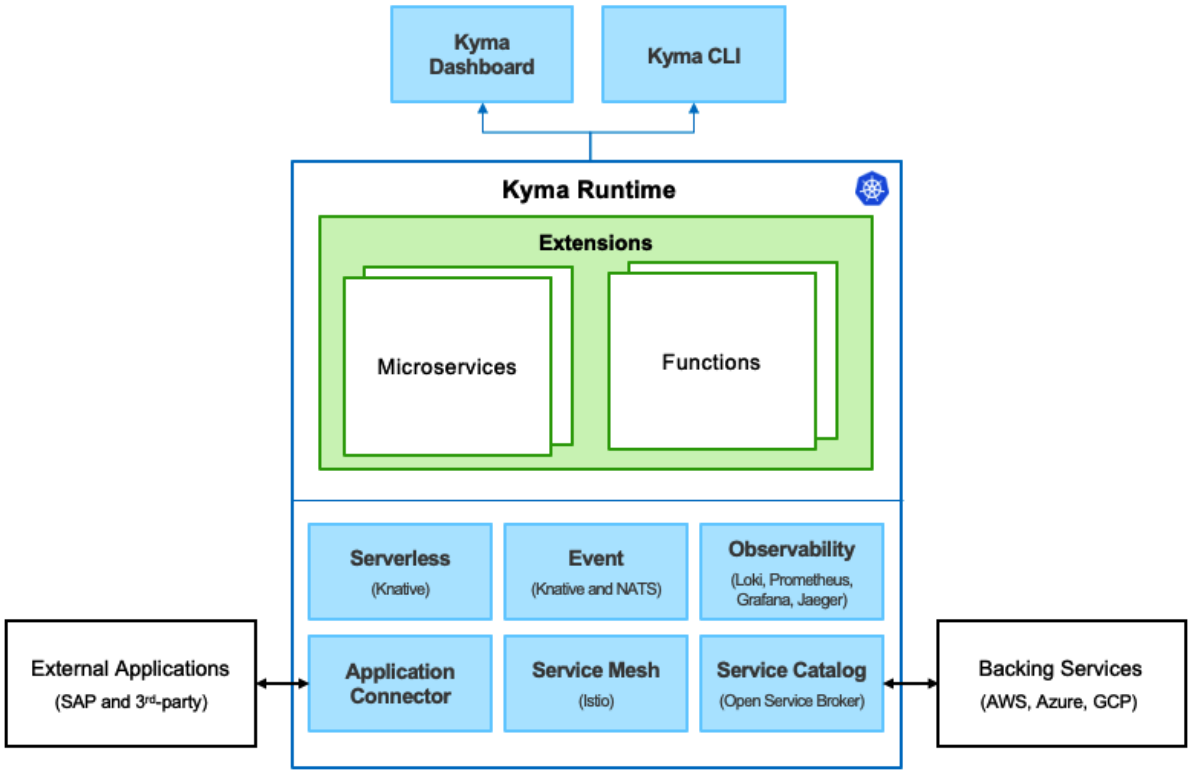

Kubernetes
SaaS Applications
PaaS
Backing Services
Opinionated Application Platform
(e.g., Cloud Foundry)
IaaS
Compute
Storage
Network
AI Hardware


HorizontalPod Autoscaler
Scales the number of Pods
Deployment
Creates a ReplicaSet and handles rollouts and rollbacks
CronJob
Creates Jobs as defined in a time schedule
StatefulSet
Creates Pods for the needs of stateful applications
ReplicaSet
Creates the desired amount of Pod instances
Job
Creates Pods for one time executions
DaemonSet
Creates exactly one Pod per Node
Pod
Smallest deployment and compute resource in K8s
Ingress
Makes a Service accessible from outside
Service
Exposes and load balances between a number of Pods
PersistentVolume Claim
Requests storage from a persistent volume
PersistentVolume
Abstracts storage and persists beyond the lifecycle of a container

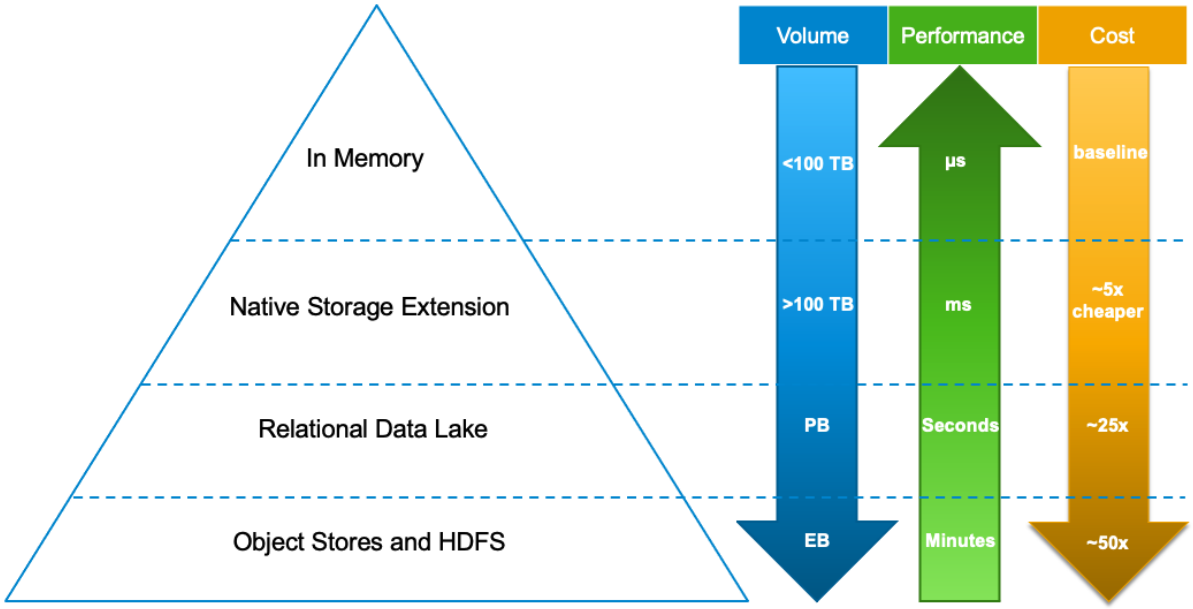
Gardener – Kubernetes-as-a-service at Scale

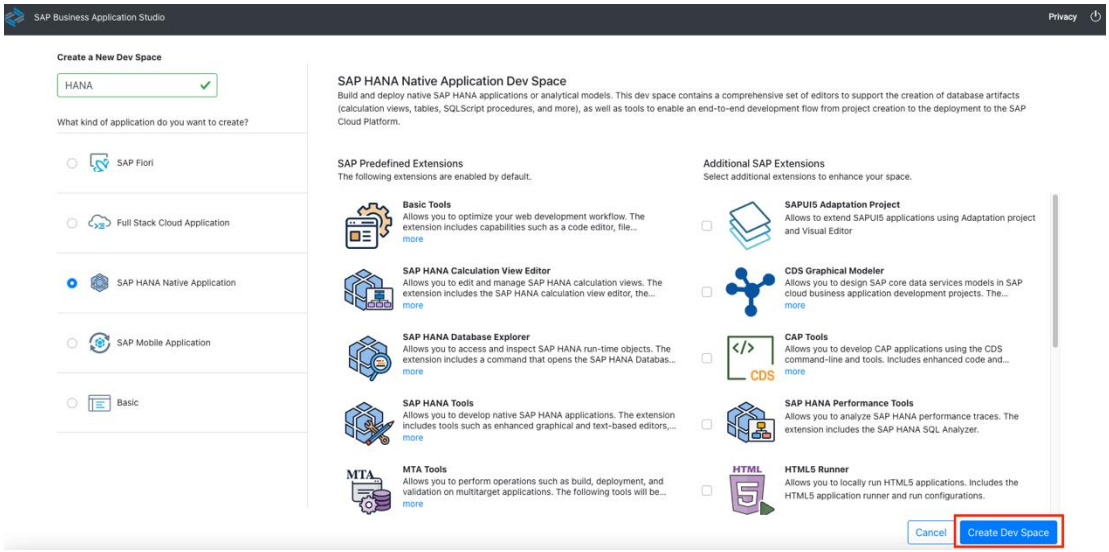
- Multi-cloud & multi-OS portability
- Configurable Control Plane
- Homogenous
- Hybrid and private cloud support
- Fleet Management
- Thousands of Clusters
- Minimal TCO
- Control Plane as a service

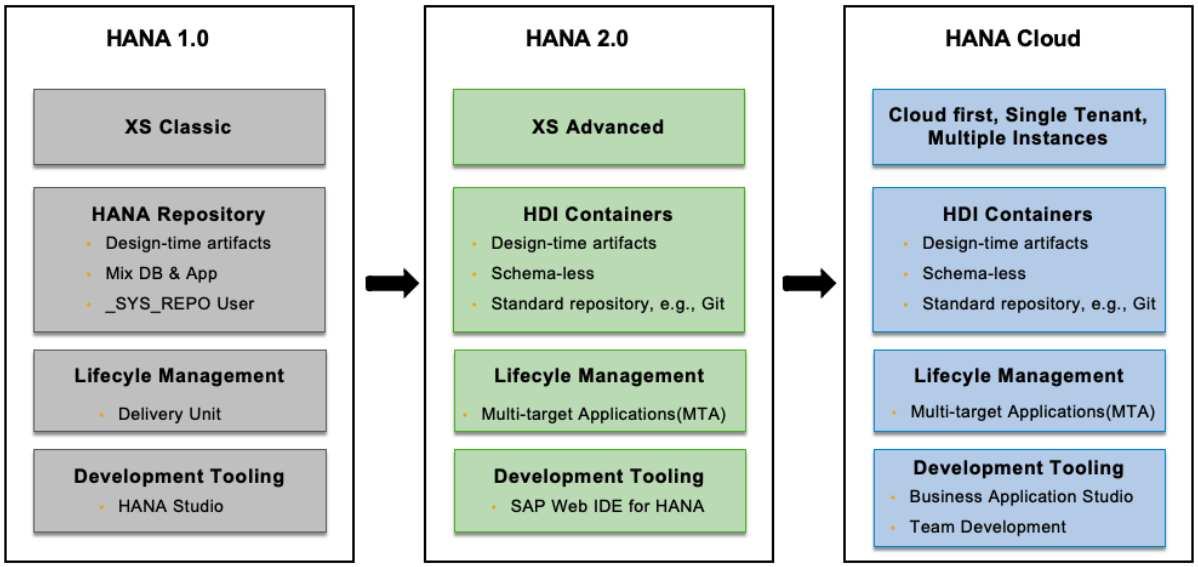


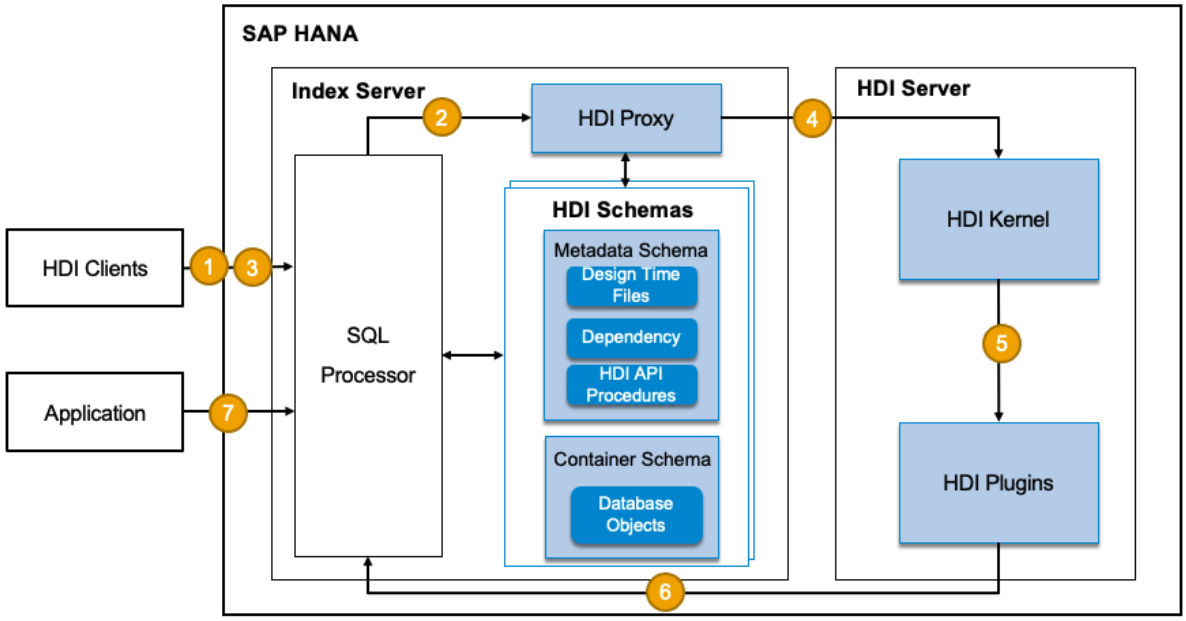

Kyma Dashboard
Kyma CLI
Kyma Runtime
Extensions
Microservices
Functions
Serverless
(Knative)
Event
(Knative and NATS)
Observability
(Loki, Prometheus, Grafana, Jaeger)
External Applications
(SAP and 3rd-party)
Application Connector
Service Mesh
(Istio)
Service Catalog
(Open Service Broker)
Backing Services
(AWS, Azure, GCP)

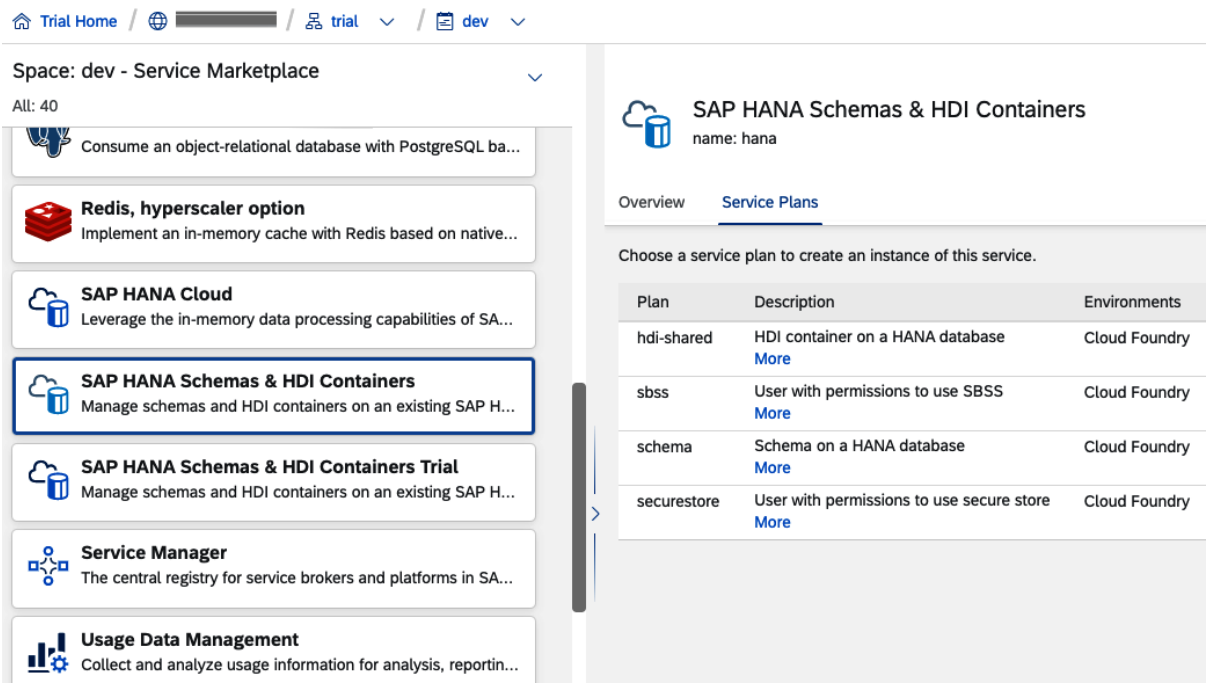
Chapter 12: SAP HANA Cloud

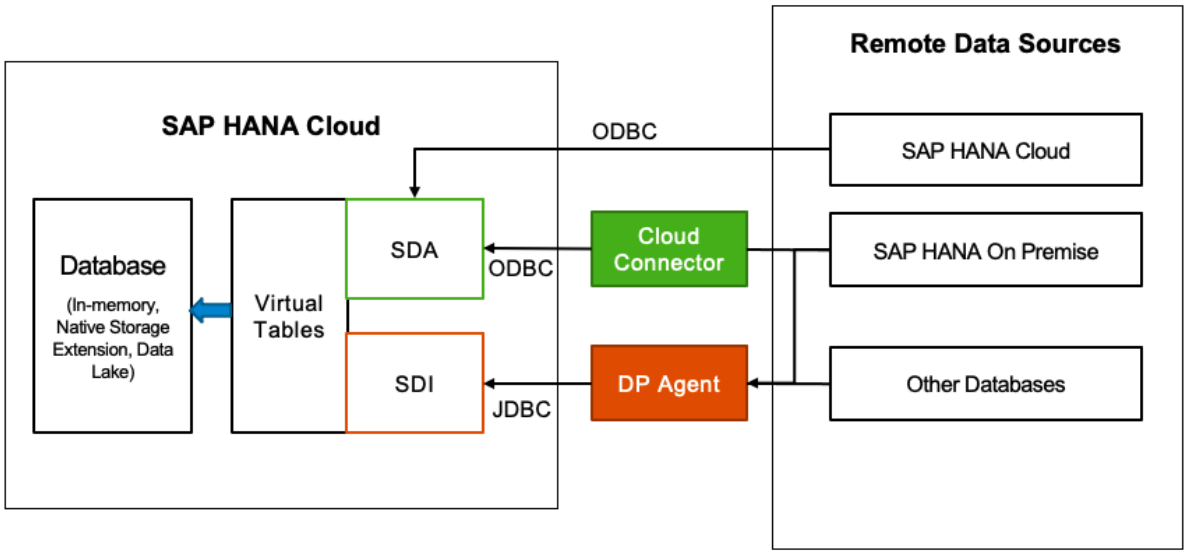


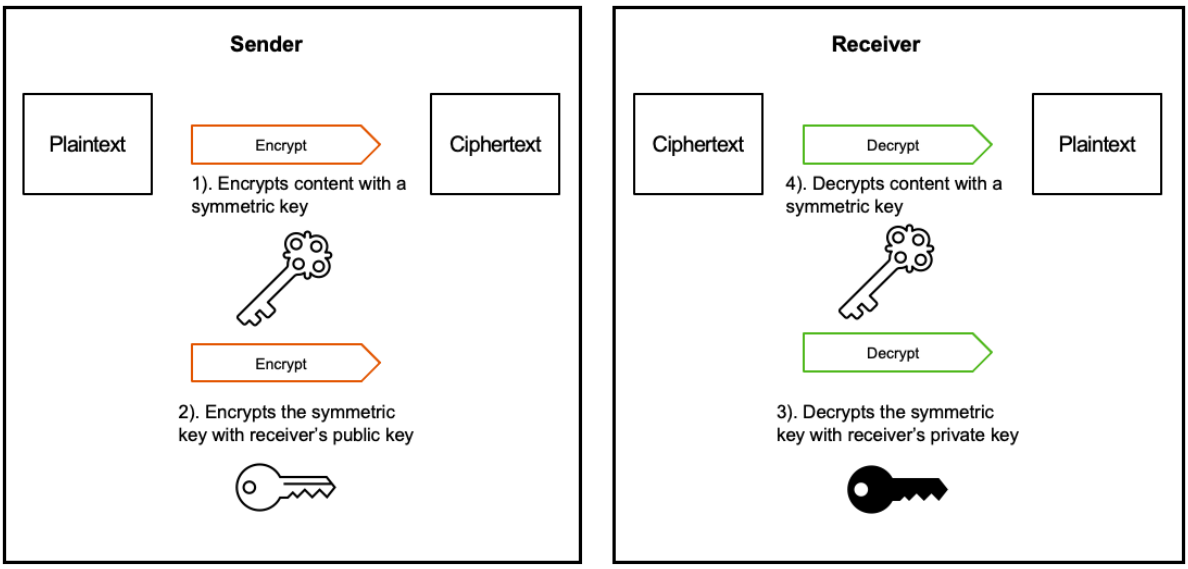


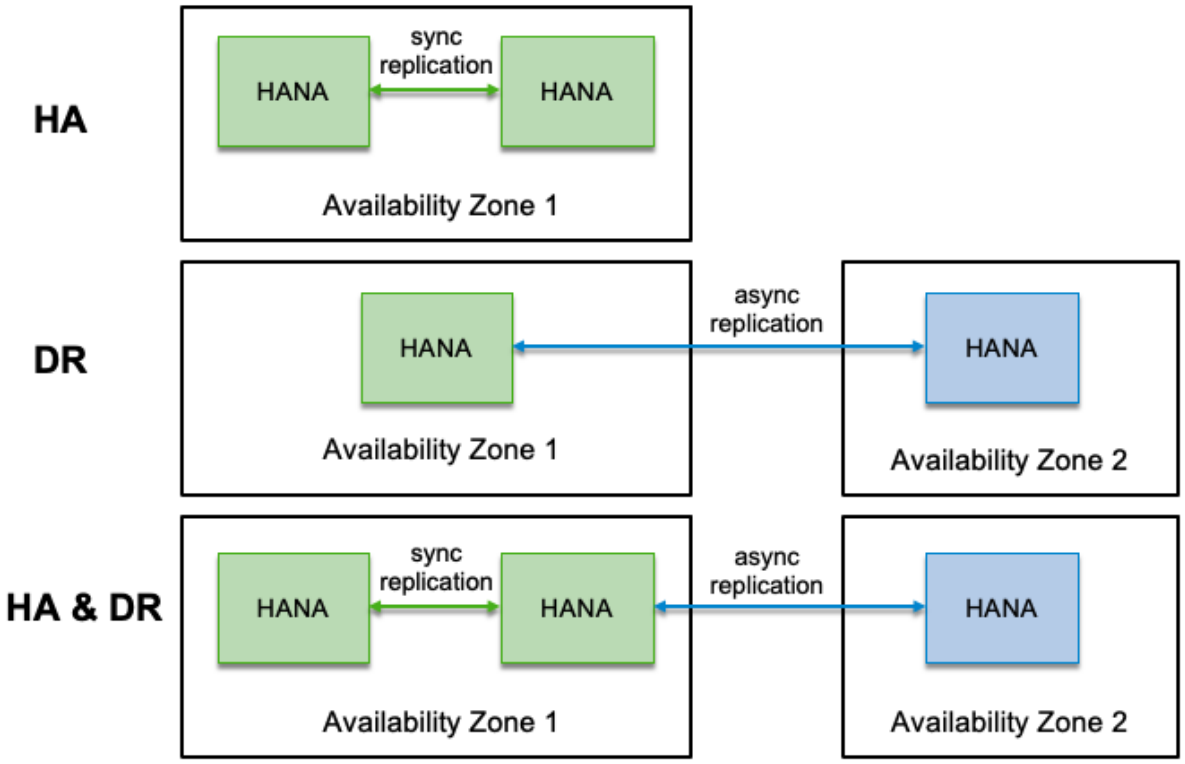

HANA 1.0
XS Classic
HANA Repository
Design-time artifacts
Mix DB & App
_SYS_REPO User
Lifecyle Management
Delivery Unit
Development Tooling
HANA Studio
HANA 2.0
XS Advanced
HDI Containers
Design-time artifacts
Schema-less
Standard repository, e.g., Git
Lifecyle Management
Multi-target Applications(MTA)
Development Tooling
SAP Web IDE for HANA
HANA Cloud
Cloud first, Single Tenant, Multiple Instances
HDI Containers
Design-time artifacts
Schema-less
Standard repository, e.g., Git
Lifecyle Management
Multi-target Applications(MTA)
Development Tooling
Business Application Studio
Team Development

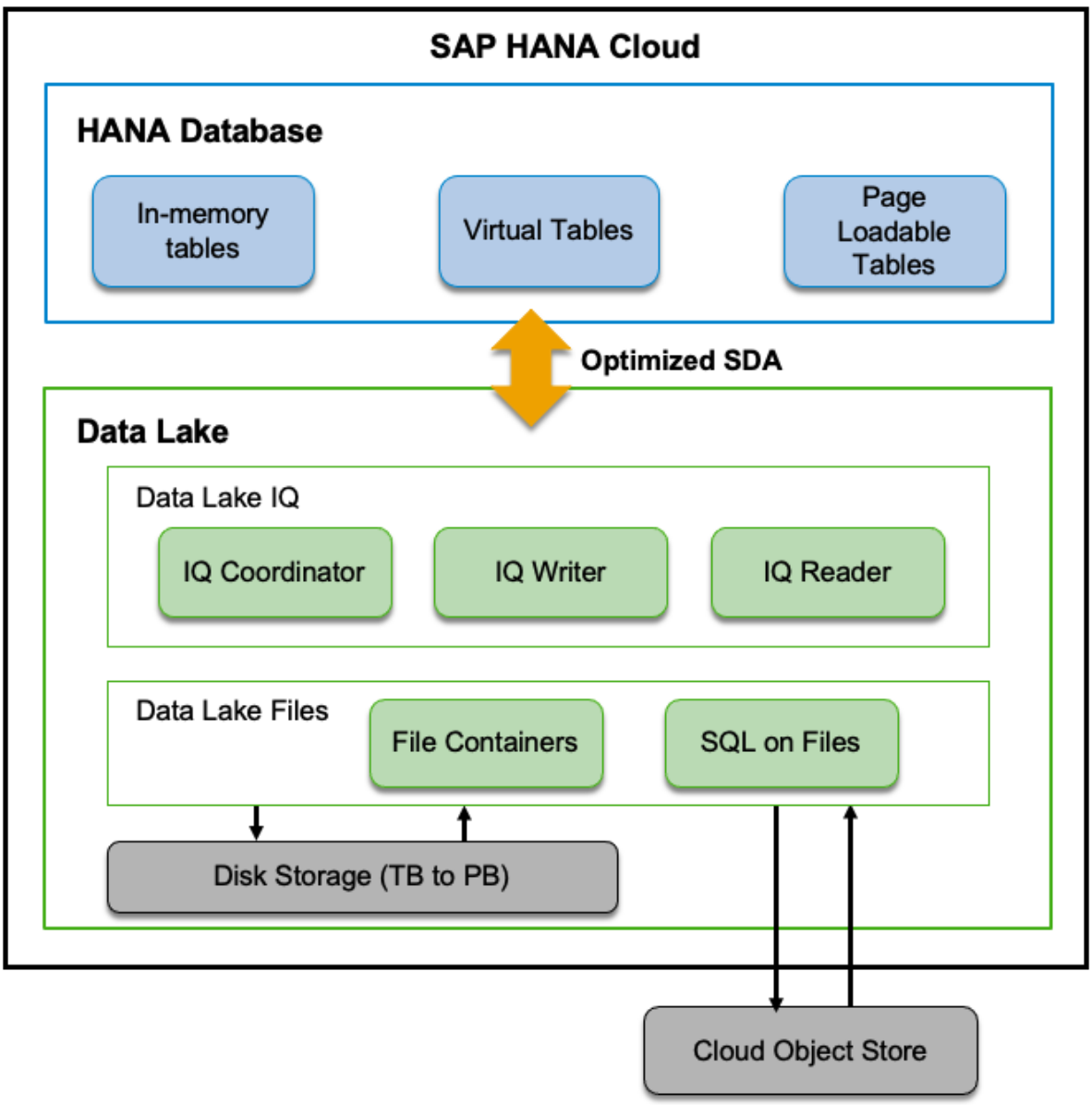

SAP HANA
Index Server
HDI Proxy
HDI Server
HDI Kernel
HDI Schemas
Metadata Schema
Design Time Files
Dependency
HDI API Procedures
Container Schema
Database Objects
SQL Processor
HDI Clients
Application
HDI Plugins
1
2
3
4
5
6
7

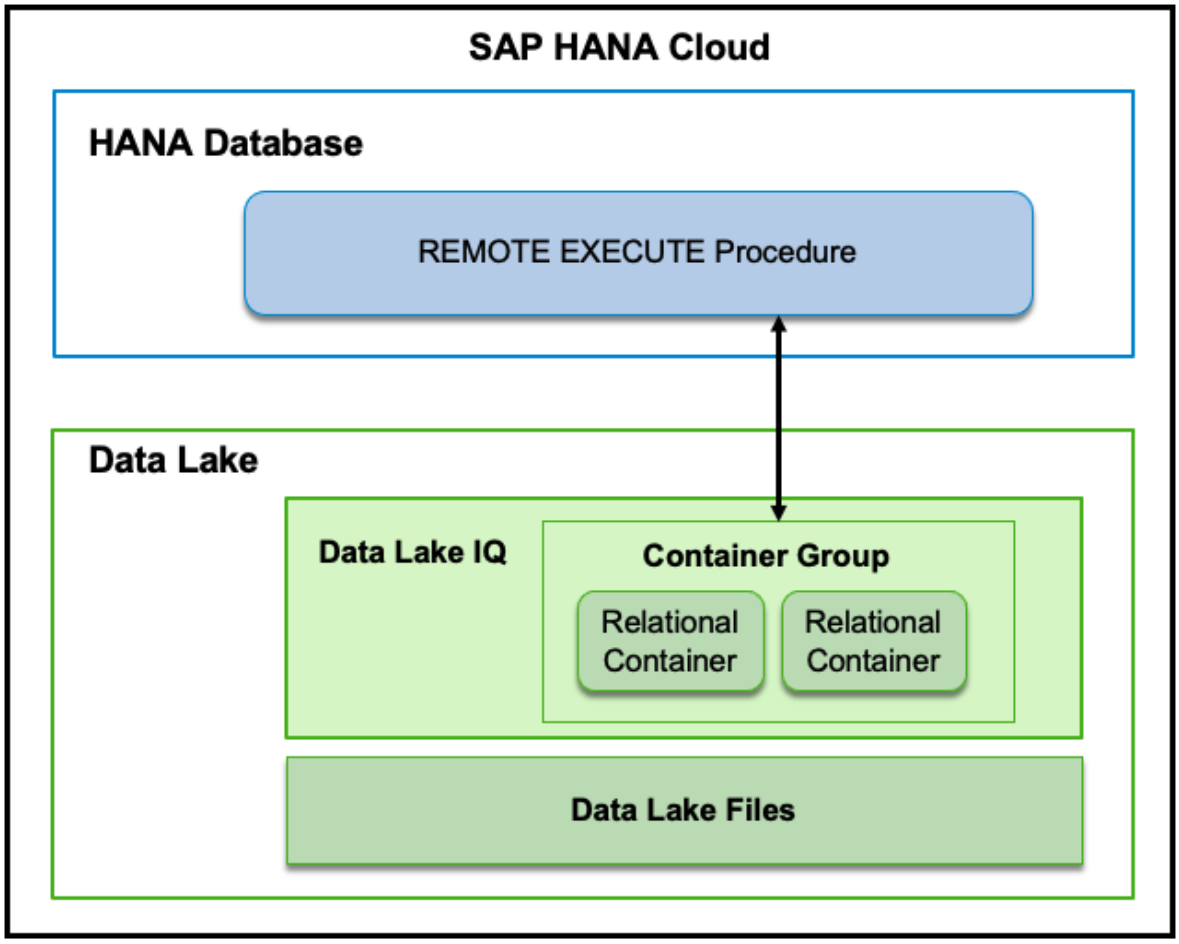

Trial Home / [redacted] / trial / dev
Space: dev - Service Marketplace
All: 40
Consume an object-relational database with PostgreSQL ba...
Redis, hyperscaler option
Implement an in-memory cache with Redis based on native...
SAP HANA Cloud
Leverage the in-memory data processing capabilities of SA...
SAP HANA Schemas & HDI Containers
Manage schemas and HDI containers on an existing SAP H...
SAP HANA Schemas & HDI Containers Trial
Manage schemas and HDI containers on an existing SAP H...
Service Manager
The central registry for service brokers and platforms in SA...
Usage Data Management
Collect and analyze usage information for analysis, reportin...
SAP HANA Schemas & HDI Containers
name: hana
Overview
Service Plans
Choose a service plan to create an instance of this service.
Plan
Description
Environments
hdi-shared
HDI container on a HANA database
More
Cloud Foundry
sbss
User with permissions to use SBSS
More
Cloud Foundry
schema
Schema on a HANA database
More
Cloud Foundry
securestore
User with permissions to use secure store
More
Cloud Foundry


SAP HANA Cloud
Database
(In-memory, Native Storage Extension, Data Lake)
Virtual Tables
SDA
SDI
ODBC
JDBC
Cloud Connector
DP Agent
ODBC
Remote Data Sources
SAP HANA Cloud
SAP HANA On Premise
Other Databases

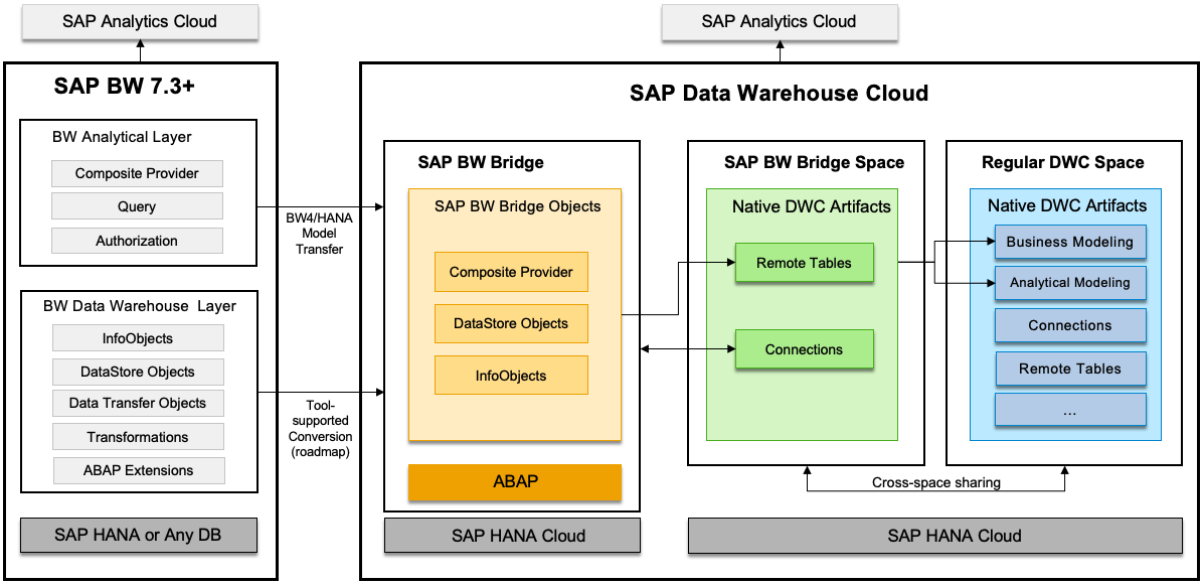

Sender
Plaintext
Encrypt
Ciphertext
1). Encrypts content with a symmetric key
Encrypt
2). Encrypts the symmetric key with receiver's public key
Receiver
Ciphertext
Decrypt
Plaintext
4). Decrypts content with a symmetric key
Decrypt
3). Decrypts the symmetric key with receiver's private key

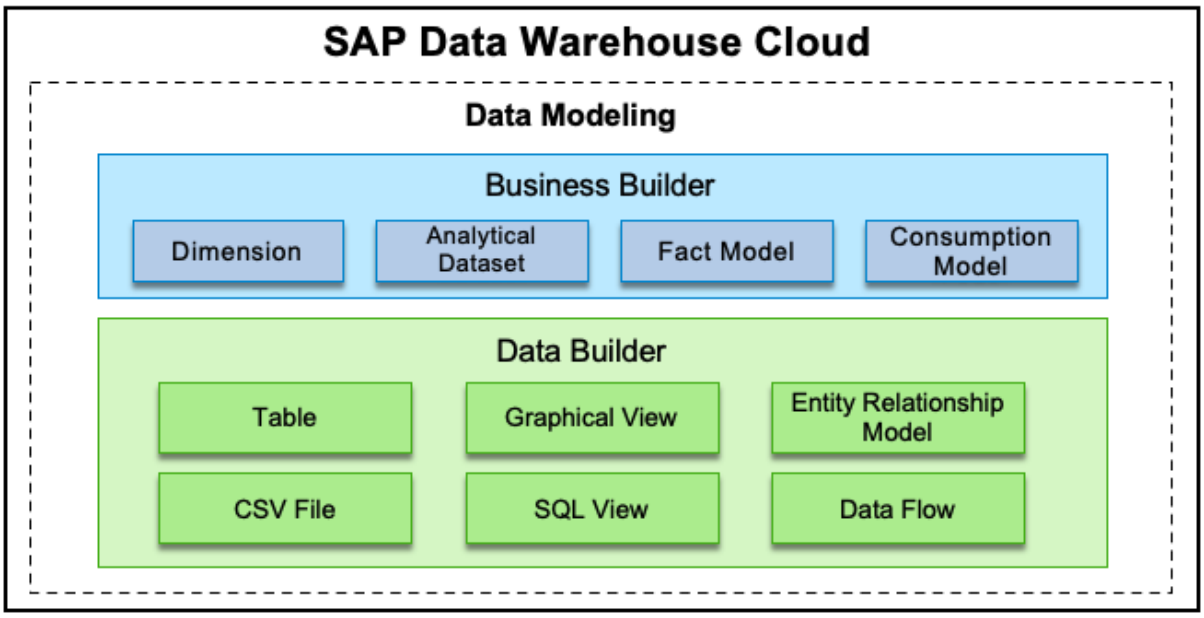

HA
HANA
sync replication
HANA
Availability Zone 1
DR
HANA
async replication
HANA
Availability Zone 1
Availability Zone 2
HA & DR
HANA
sync replication
HANA
async replication
HANA
Availability Zone 1
Availability Zone 2

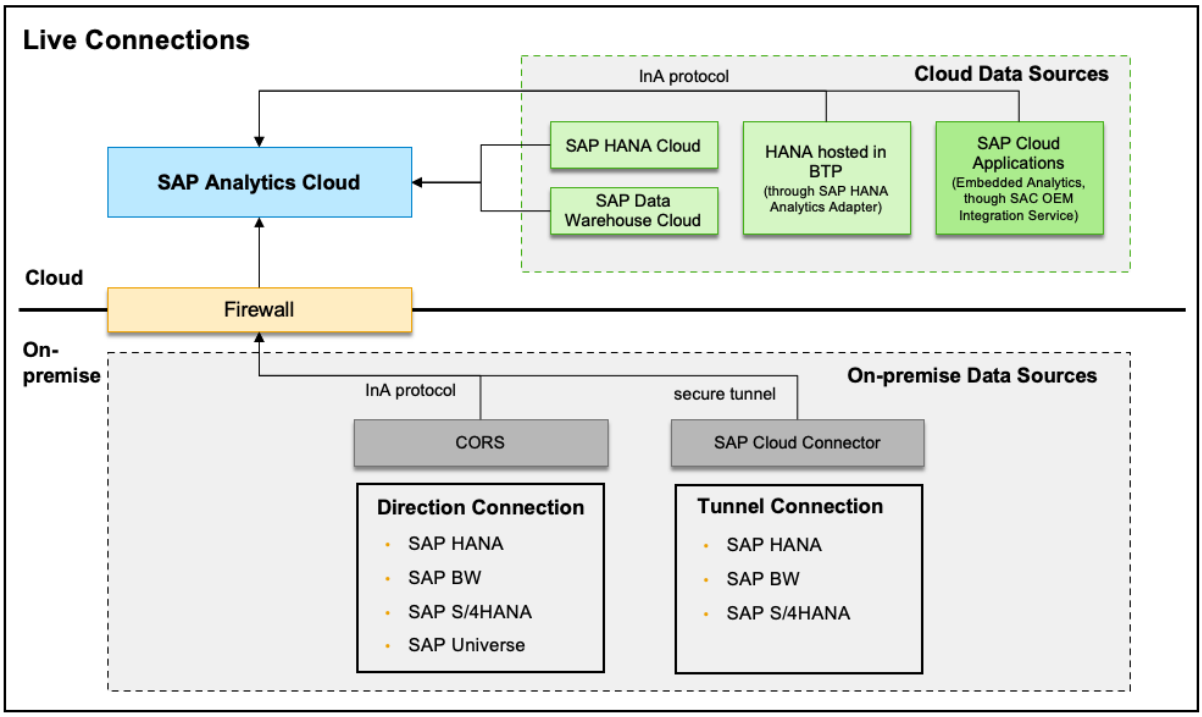

SAP HANA Cloud
HANA Database
In-memory tables
Virtual Tables
Page Loadable Tables
Optimized SDA
Data Lake
Data Lake IQ
IQ Coordinator
IQ Writer
IQ Reader
Data Lake Files
File Containers
SQL on Files
Disk Storage (TB to PB)
Cloud Object Store

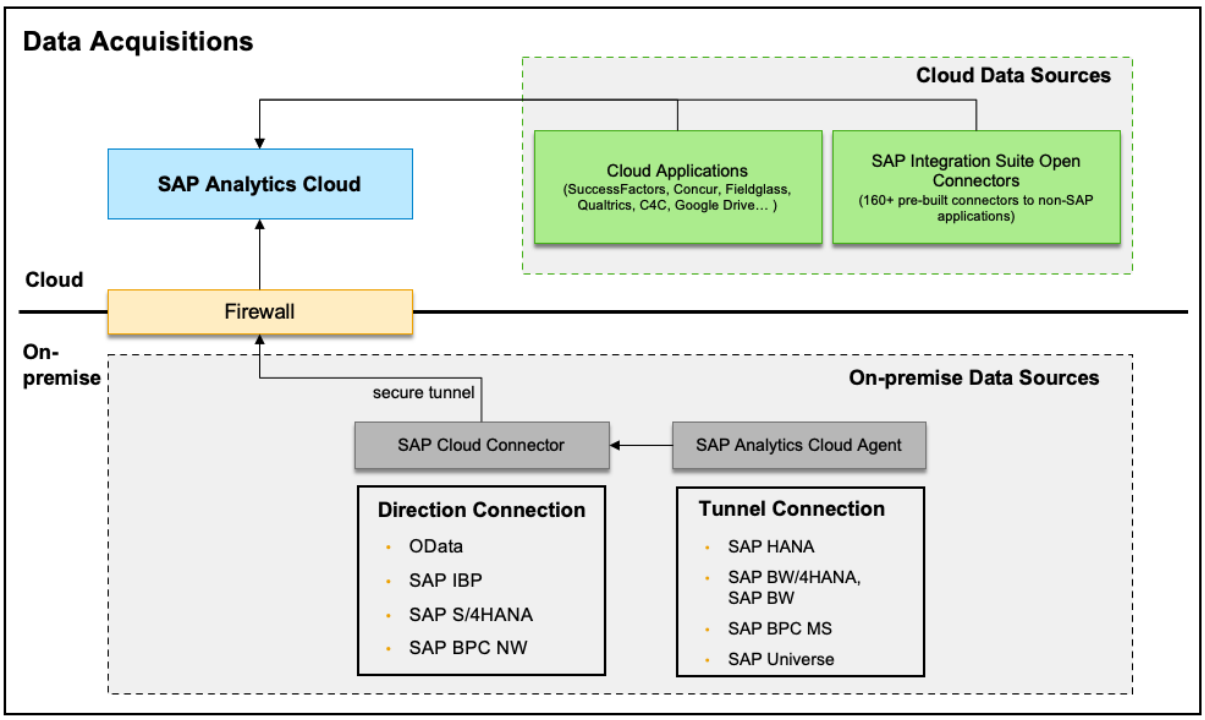

SAP HANA Cloud
HANA Database
REMOTE EXECUTE Procedure
Data Lake
Data Lake IQ
Container Group
Relational Container
Relational Container
Data Lake Files

Chapter 13: SAP Analytics Cloud






Live Connections
InA protocol
Cloud Data Sources
SAP HANA Cloud
SAP Data Warehouse Cloud
HANA hosted in BTP
(through SAP HANA Analytics Adapter)
SAP Cloud Applications
(Embedded Analytics, though SAC OEM Integration Service)
SAP Analytics Cloud
Cloud
Firewall
On-premise
On-premise Data Sources
InA protocol
secure tunnel
CORS
SAP Cloud Connector
Direction Connection
SAP HANA
SAP BW
SAP S/4HANA
SAP Universe
Tunnel Connection
SAP HANA
SAP BW
SAP S/4HANA

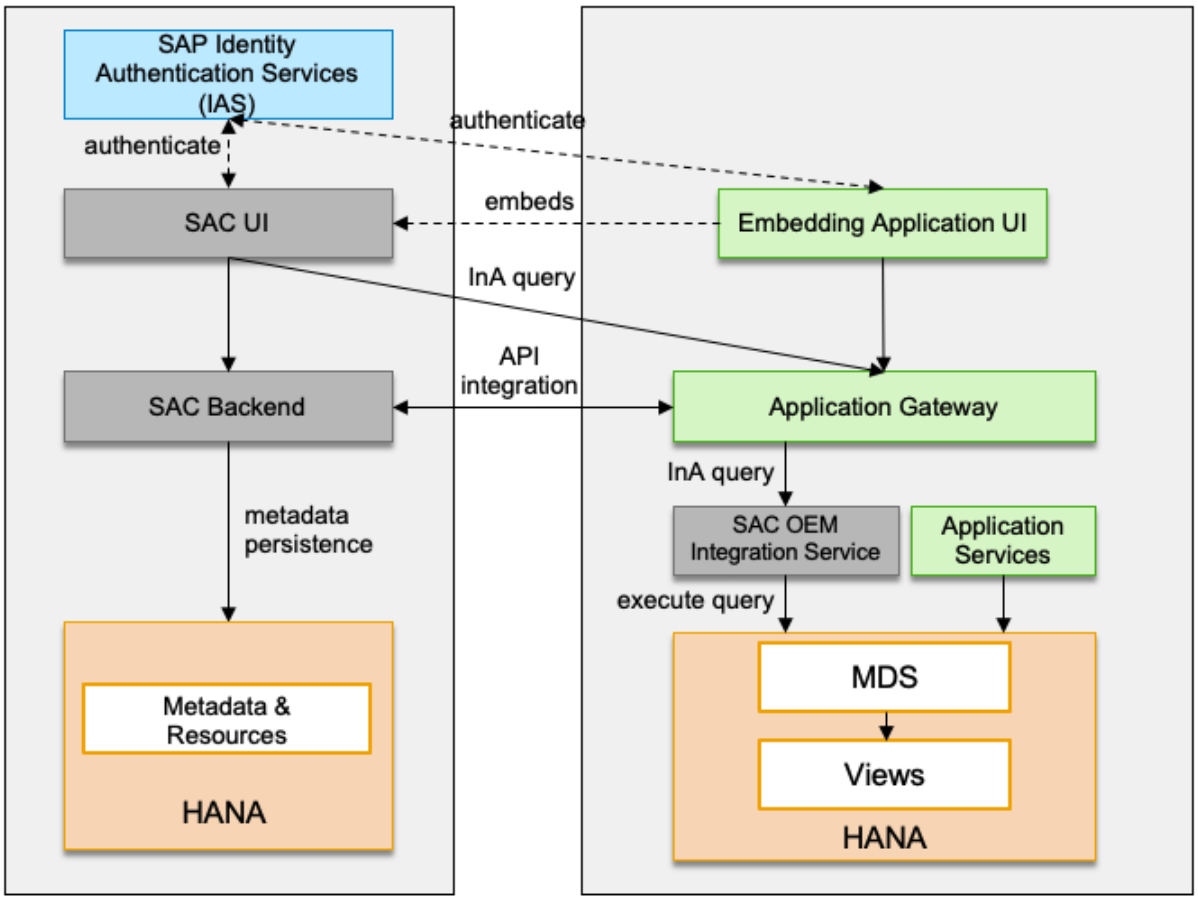

Data Acquisitions
Cloud Data Sources
Cloud Applications
(SuccessFactors, Concur, Fieldglass, Qualtrics, C4C, Google Drive…)
SAP Integration Suite Open Connectors
(160+ pre-built connectors to non-SAP applications)
SAP Analytics Cloud
Cloud
Firewall
On-premise
On-premise Data Sources
secure tunnel
SAP Cloud Connector
SAP Analytics Cloud Agent
Direction Connection
OData
SAP IBP
SAP S/4HANA
SAP BPC NW
Tunnel Connection
SAP HANA
SAP BW/4HANA, SAP BW
SAP BPC MS
SAP Universe

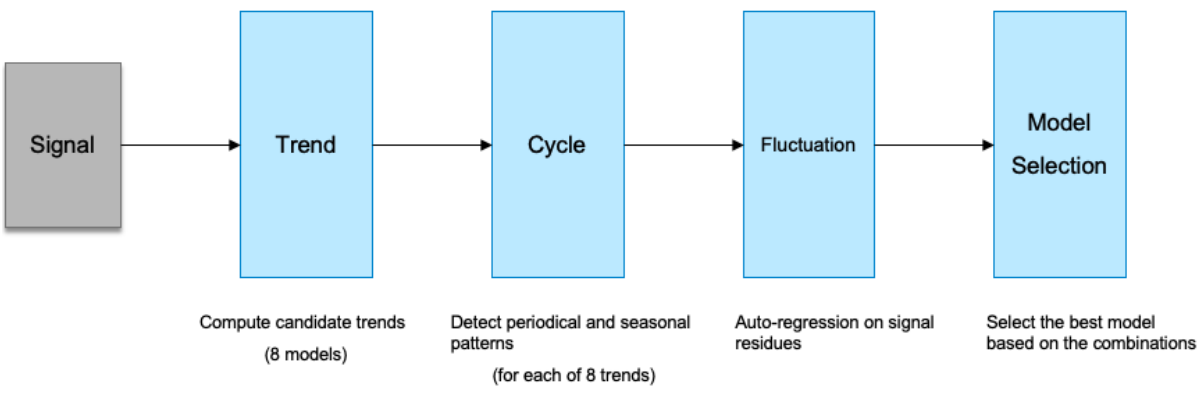
Classic Account Model: Single measure with multiple accounts

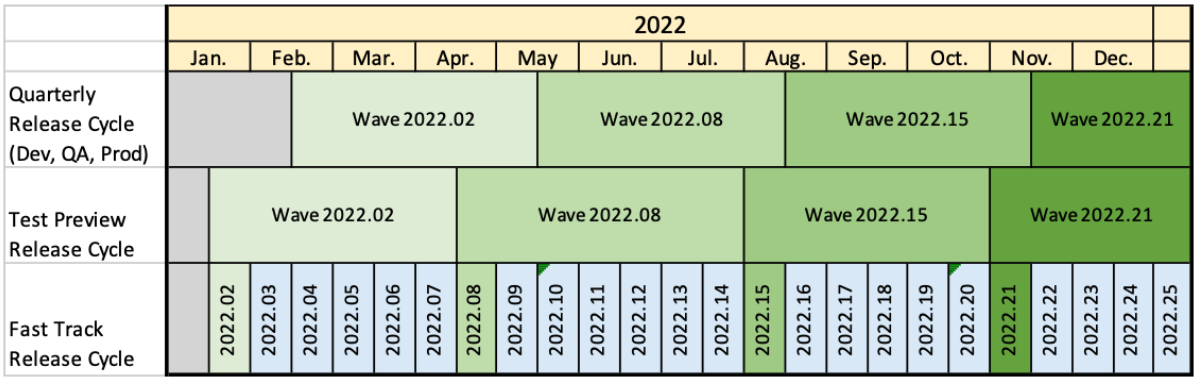
Account	Customer ID	Product	SignedData
No. of License	1	Prod-1	100
No. of License	2	Prod-2	200
Opportunity Value	1	Prod-1	100,000.00
Opportunity Value	2	Prod-2	200,000.00

New Model: Multiple measures without account dimension

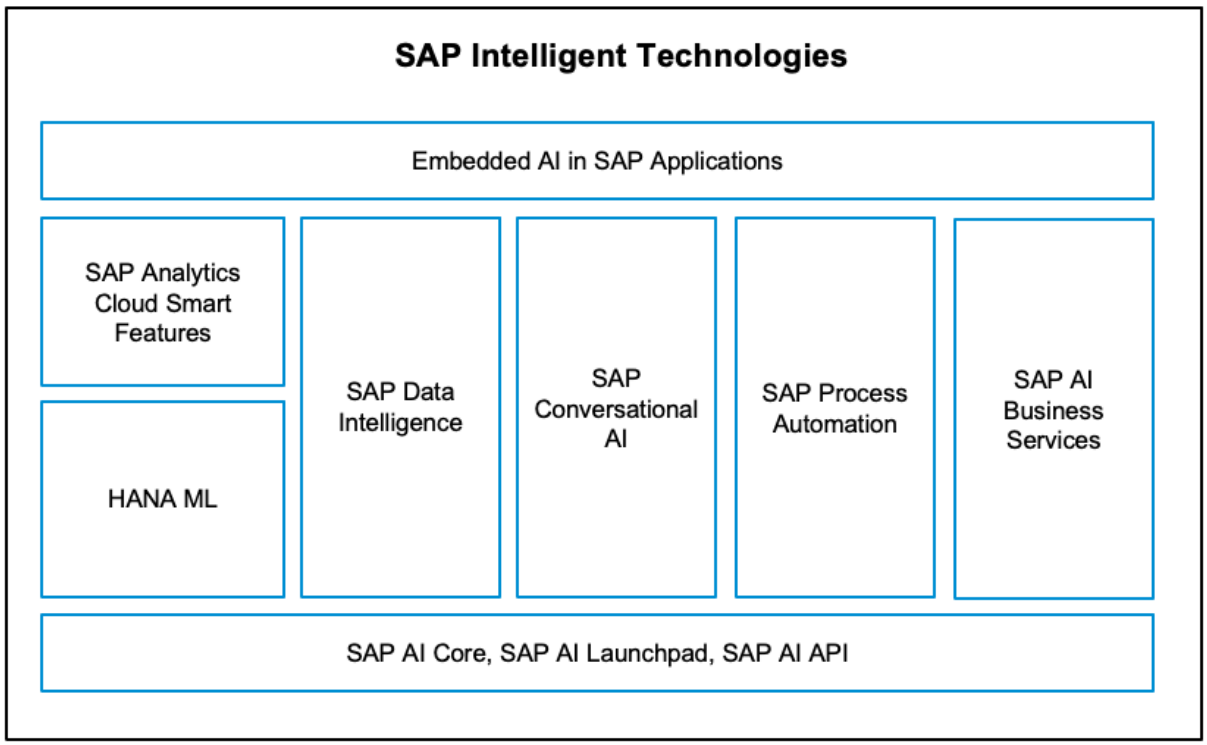
Customer ID	Product	No. of License	Opportunity Value
1	Prod-1	100	100,000.00
2	Prod-2	200	200,000.00

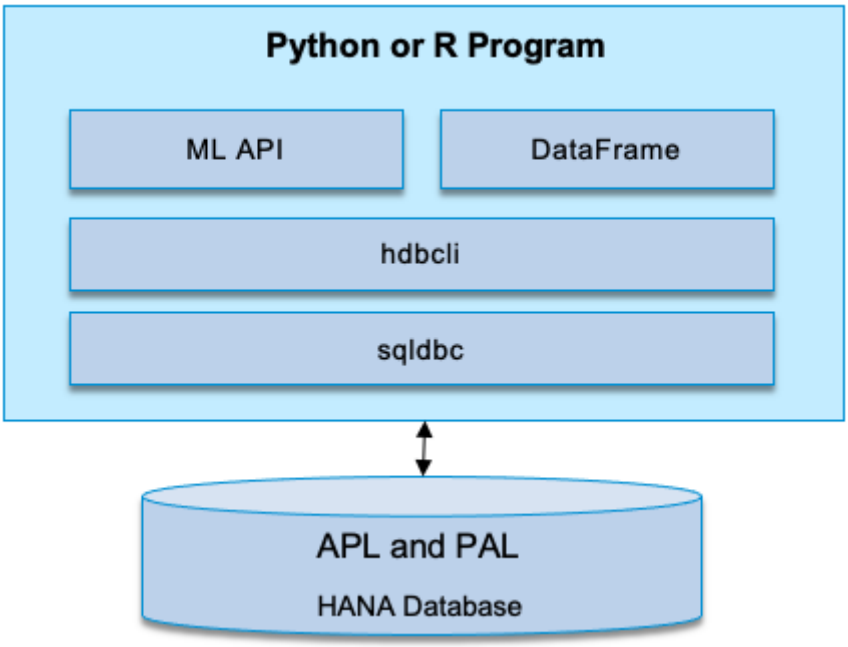


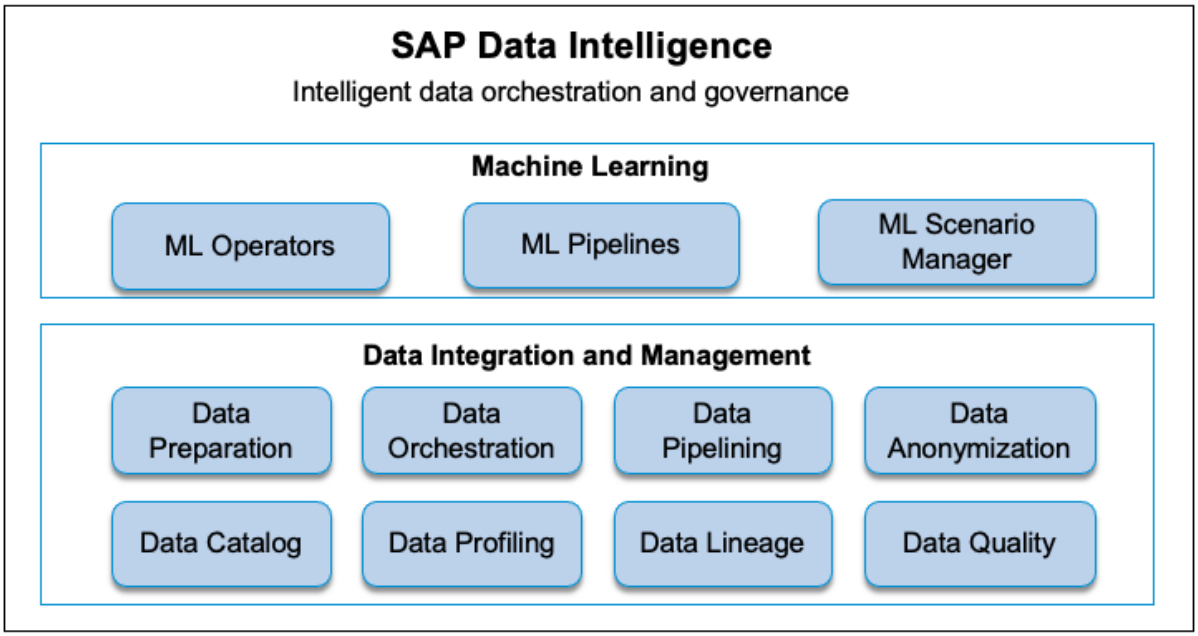


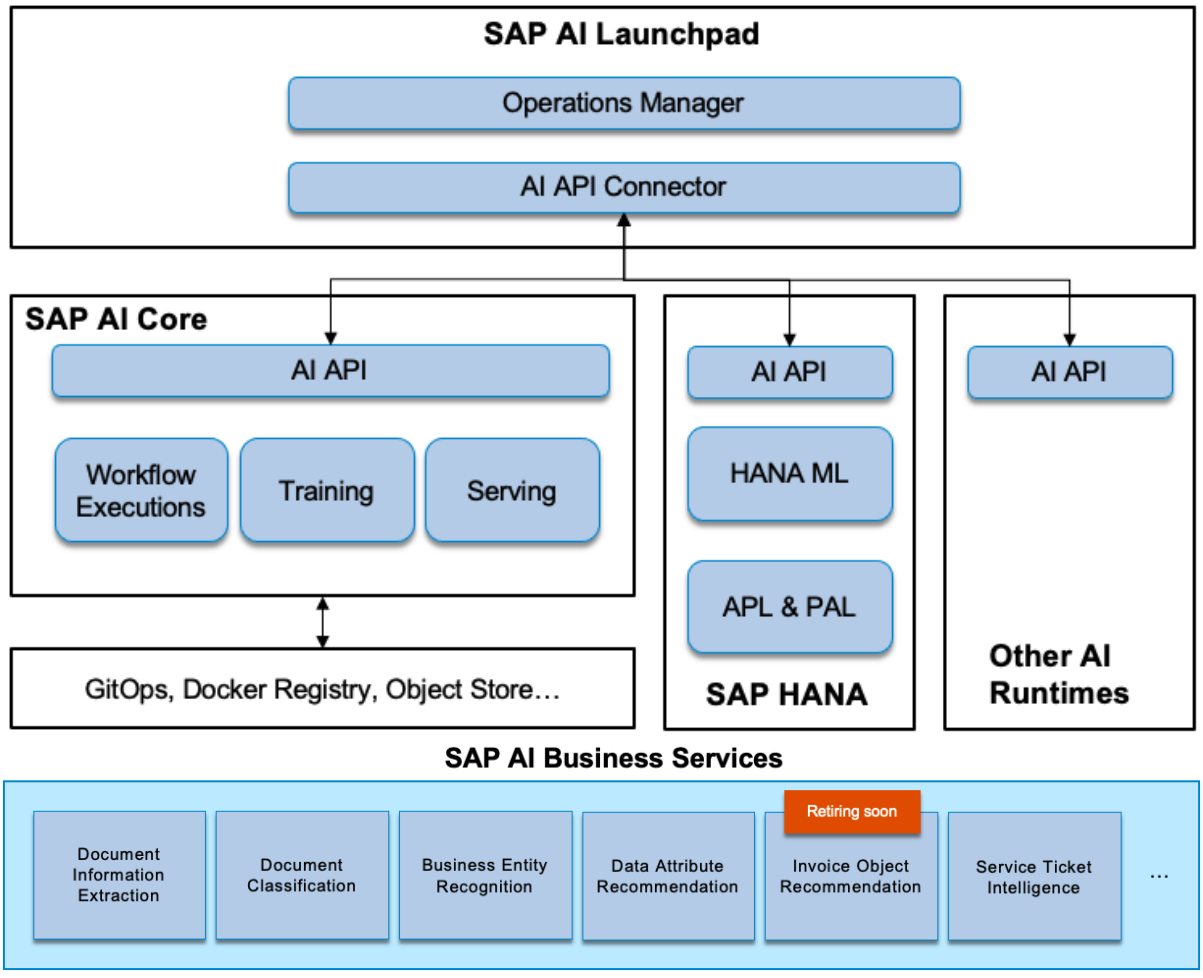

2022
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
Quarterly Release Cycle (Dev, QA, Prod)
Wave 2022.02
Wave 2022.08
Wave 2022.15
Wave 2022.21
Test Preview Release Cycle
Wave 2022.02
Wave 2022.08
Wave 2022.15
Wave 2022.21
Fast Track Release Cycle
2022.02
2022.03
2022.04
2022.05
2022.06
2022.07
2022.08
2022.09
2022.10
2022.11
2022.12
2022.13
2022.14
2022.15
2022.16
2022.17
2022.18
2022.19
2022.20
2022.21
2022.22
2022.23
2022.24
2022.25

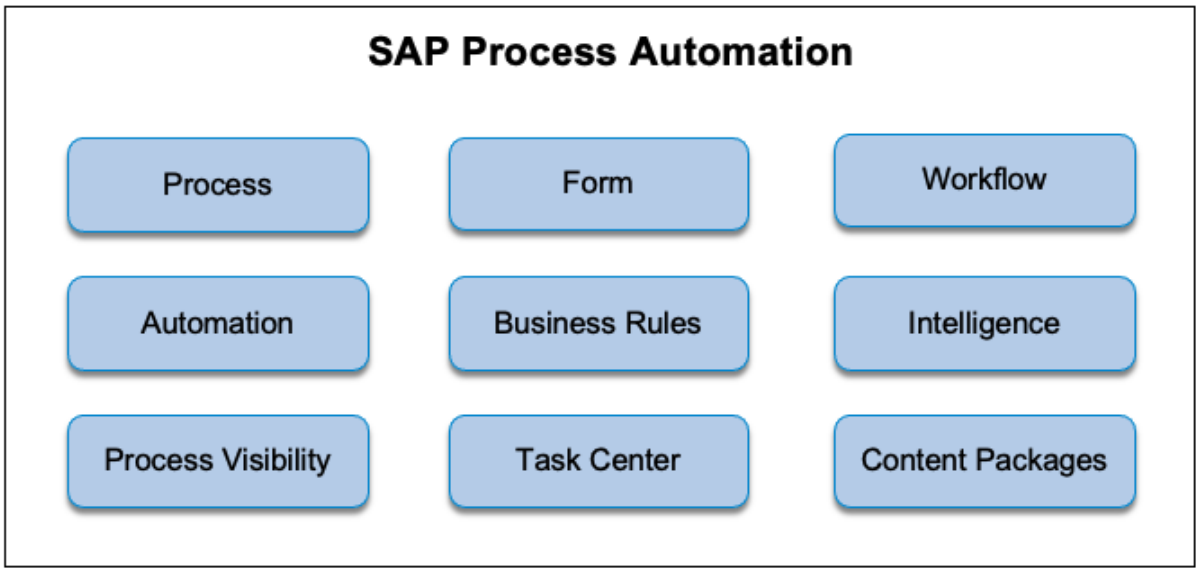
Chapter 14: SAP Intelligent Technologies

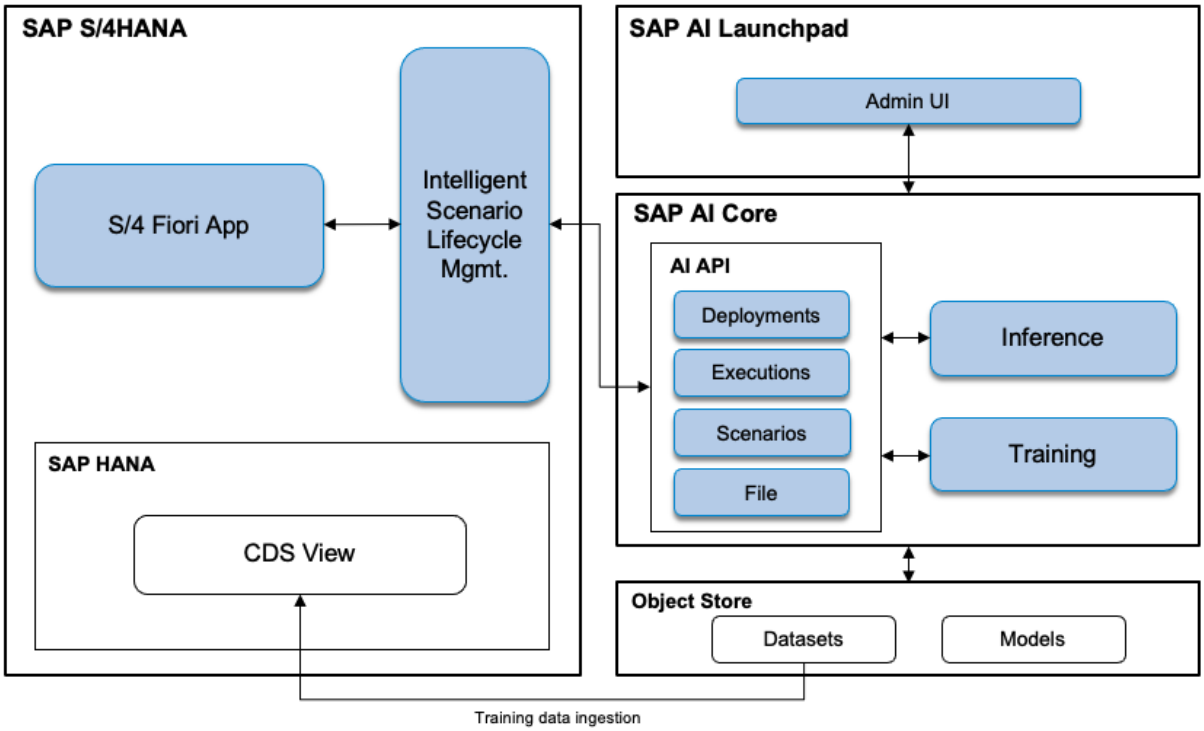


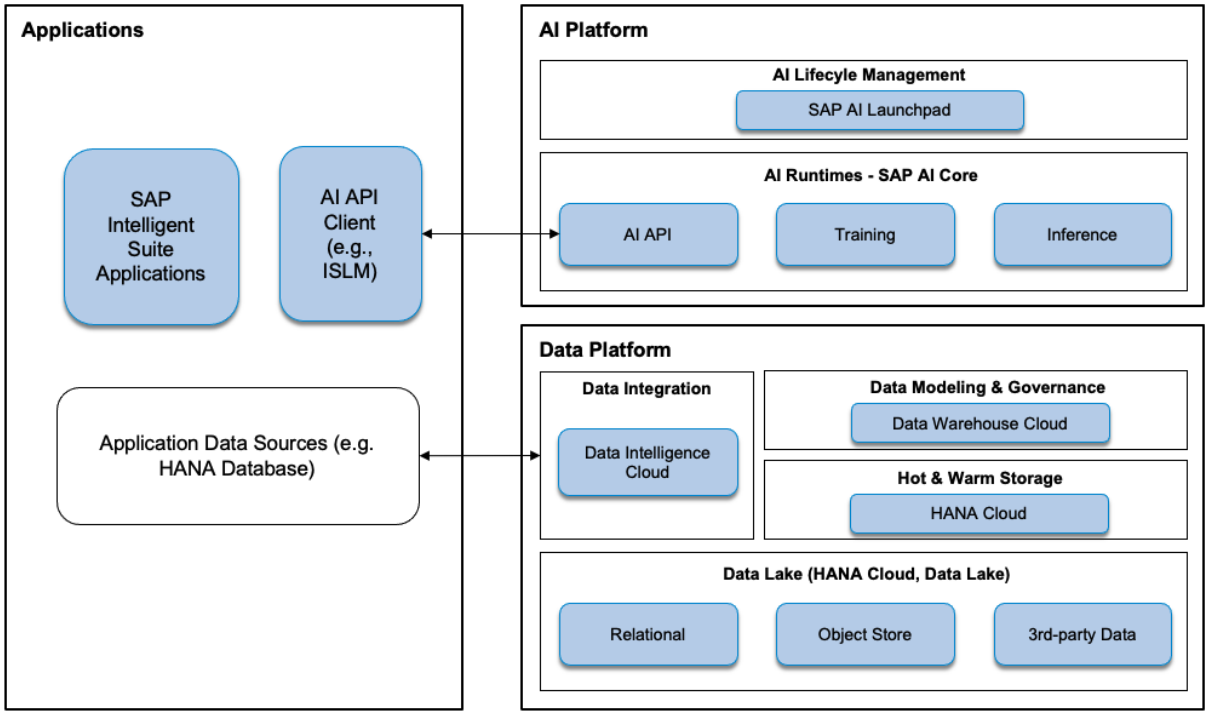



SAP Data Intelligence
Intelligent data orchestration and governance
Machine Learning
ML Operators
ML Pipelines
ML Scenario Manager
Data Integration and Management
Data Preparation
Data Orchestration
Data Pipelining
Data Anonymization
Data Catalog
Data Profiling
Data Lineage
Data Quality


SAP AI Launchpad
Operations Manager
AI API Connector
SAP AI Core
AI API
Workflow Executions
Training
Serving
GitOps, Docker Registry, Object Store…
AI API
HANA ML
APL & PAL
SAP HANA
AI API
Other AI Runtimes
SAP AI Business Services
Document Information Extraction
Document Classification
Business Entity Recognition
Data Attribute Recommendation
Retiring soon
Invoice Object Recommendation
Service Ticket Intelligence
…


SAP Process Automation
Process
Form
Workflow
Automation
Business Rules
Intelligence
Process Visibility
Task Center
Content Packages


SAP S/4HANA
S/4 Fiori App
Intelligent Scenario Lifecycle Mgmt.
SAP HANA
CDS View
SAP AI Launchpad
Admin UI
SAP AI Core
AI API
Deployments
Executions
Scenarios
File
Inference
Training
Object Store
Datasets
Models
Training data ingestion


Applications
SAP Intelligent Suite Applications
AI API Client (e.g., ISLM)
Application Data Sources (e.g. HANA Database)
AI Platform
AI Lifecyle Management
SAP AI Launchpad
AI Runtimes - SAP AI Core
AI API
Training
Inference
Data Platform
Data Integration
Data Intelligence Cloud
Data Modeling & Governance
Data Warehouse Cloud
Hot & Warm Storage
HANA Cloud
Data Lake (HANA Cloud, Data Lake)
Relational
Object Store
3rd-party Data