

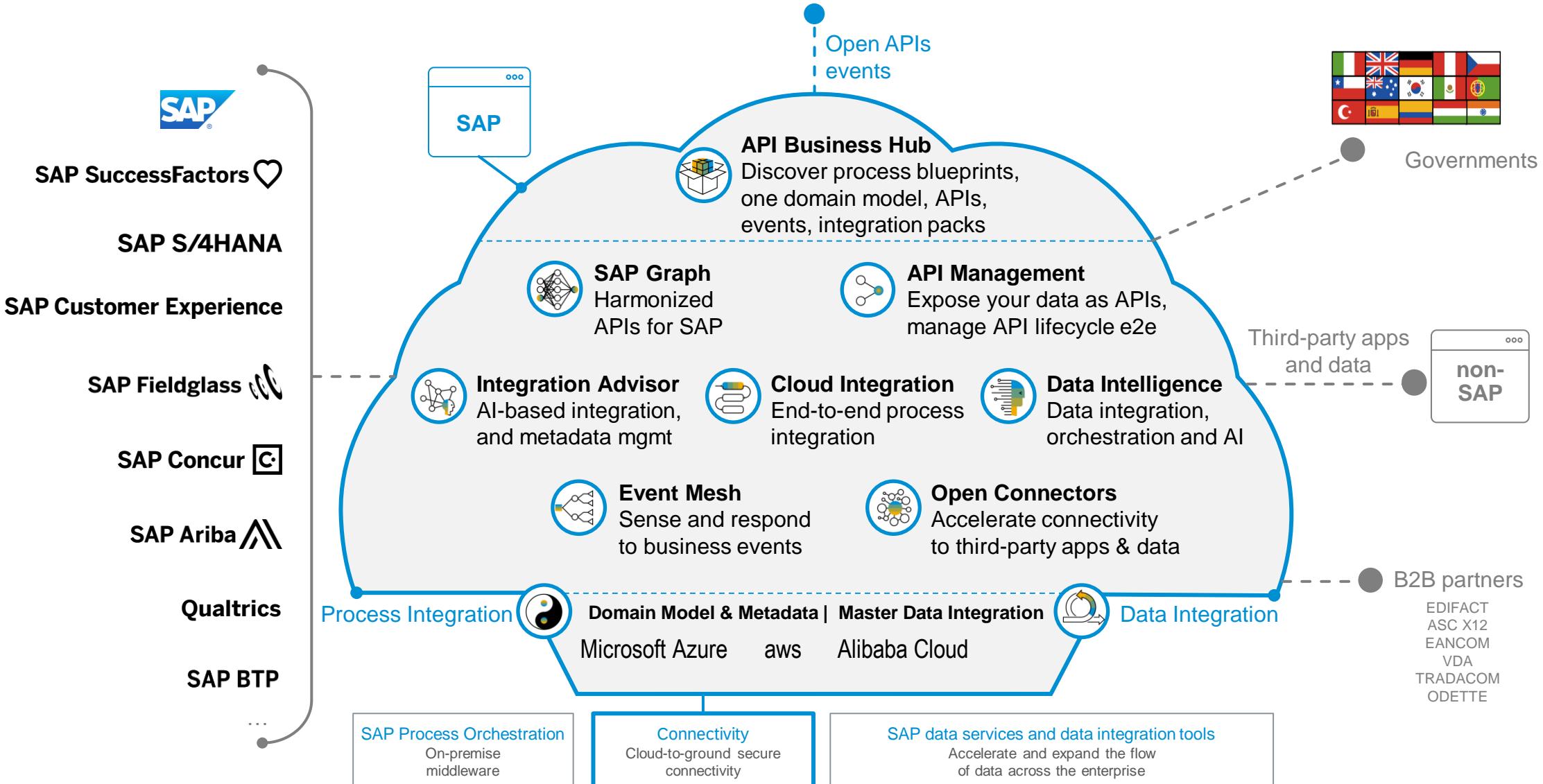


Week 1: Introduction

Unit 1: Introduction and Overview

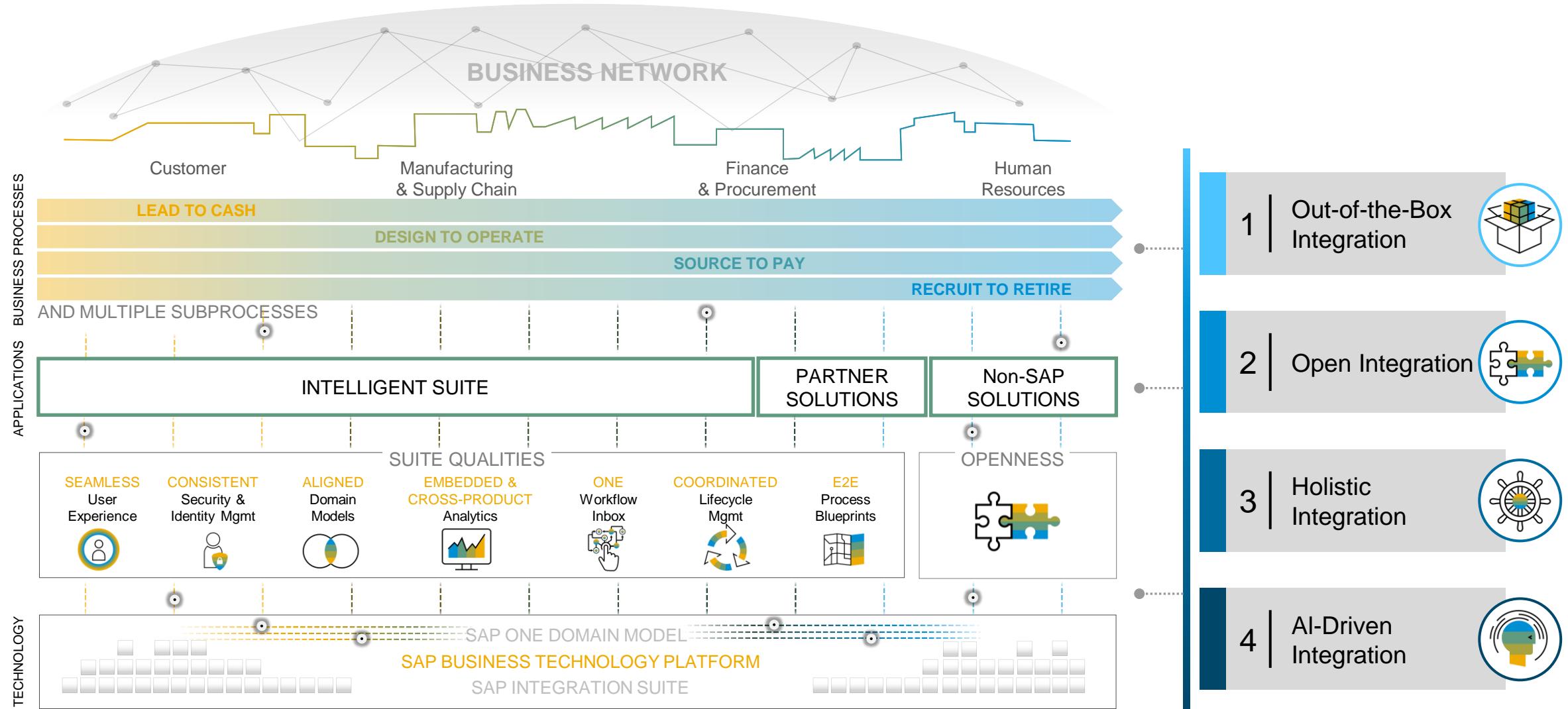
Introduction and overview

SAP Integration Suite – SAP's hybrid integration platform for the Intelligent Enterprise



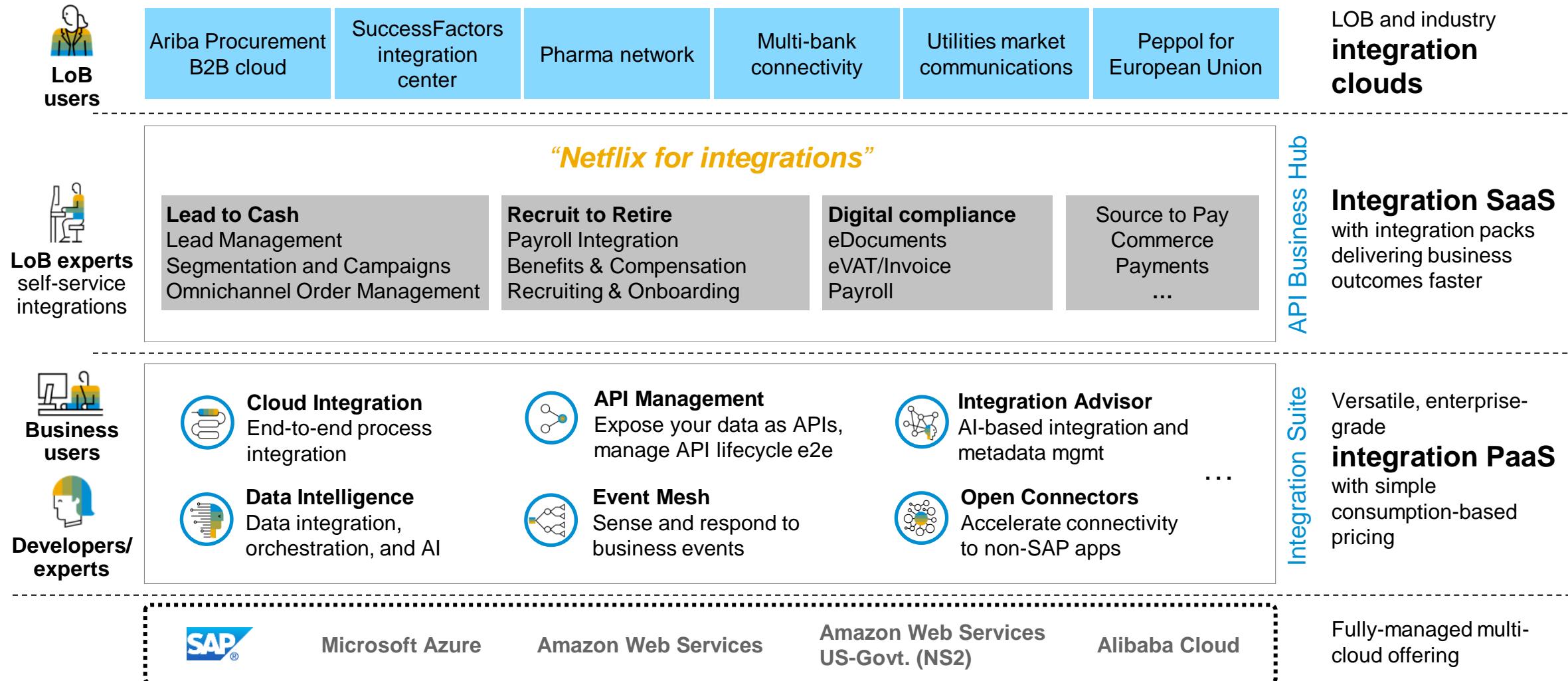
Introduction and overview

SAP Integration Suite – key integration principles for the Intelligent Enterprise



Introduction and overview

SAP Integration Suite – integration PaaS | integration SaaS | integration clouds



Top 10 reasons to choose SAP Integration Suite as your enterprise-wide integration platform

1

Versatile and enterprise-grade integration platform

covering all integration styles and patterns: A2A/B2B/B2G, APIs, events, digital integration hub, digital ecosystems

3

Rich set of connectivity options and standard adapters for A2A, B2B, and B2G integration, **170+ Open Connectors**, provided by SAP as well as by partners

5

Simplify the process of **business partner collaboration** with the **power of artificial intelligence**

7

Strong focus on enterprise-grade security such as data isolation, multitenancy, content encryption, and signing, Single Sign-On, secure on-premise connectivity

9

Create **simple connected digital experiences** for your consumers, partners, and employees with full lifecycle management of your APIs

2

2000+ out-of-box integration packs, APIs, events, domain models to jump-start your integration projects

4

Fully **vendor-managed multi-cloud services in major cloud service providers** and all in outcome-based pay-per-use pricing provides flexibility to run the same integration artifacts across multiple environments

6

Benefit from SAP's **continued strategic innovation and long-term commitment** to simplify and accelerate enterprise integration

8

Share and learn from a **community and partner ecosystem**

10

SAP Integration Solution Advisory Methodology with strong customer focus to make our customers run better

Gartner Magic Quadrant for Enterprise Integration Platform as a Service



Figure 1. Magic Quadrant for Enterprise Integration Platform as a Service



SAP was recognized as a Leader in Enterprise Integration Platform as a Service by Gartner for its completeness of vision and ability to execute.

SAP believes its placement in the Leaders quadrant is a testament to:



Integration is becoming the number-one strategic priority for organizations in the digital age and this report is a testament to how crucial SAP Integration Suite has become for customers on their digital journey.

Gartner Magic Quadrant for Enterprise Integration Platform as a Service, Eric Thoo, Massimo Pezzini, Keith Guttridge, Bindu Bhullar, Shameen Pillai, Abhishek Singh, 21 September 2020.

[READ A COMPLIMENTARY COPY
OF THE FULL REPORT](#)

[Magic Quadrant for Enterprise Integration Platform-as-a-Service.](#)

* This graphic was published by Gartner, Inc. as part of a larger research document and should be evaluated in the context of the entire document. The Gartner document is available upon request from SAP. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose. GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally, and is used herein with permission. All rights reserved.

Cloud integration

Hybrid and cloud application integration

- Intuitive web interface with built-in templates
- Supporting A2A and B2B/B2G scenarios for SAP and non-SAP

Cloud technology

- Strong security focus and infrastructure availability
- Access via public OData APIs

Integration Advisor

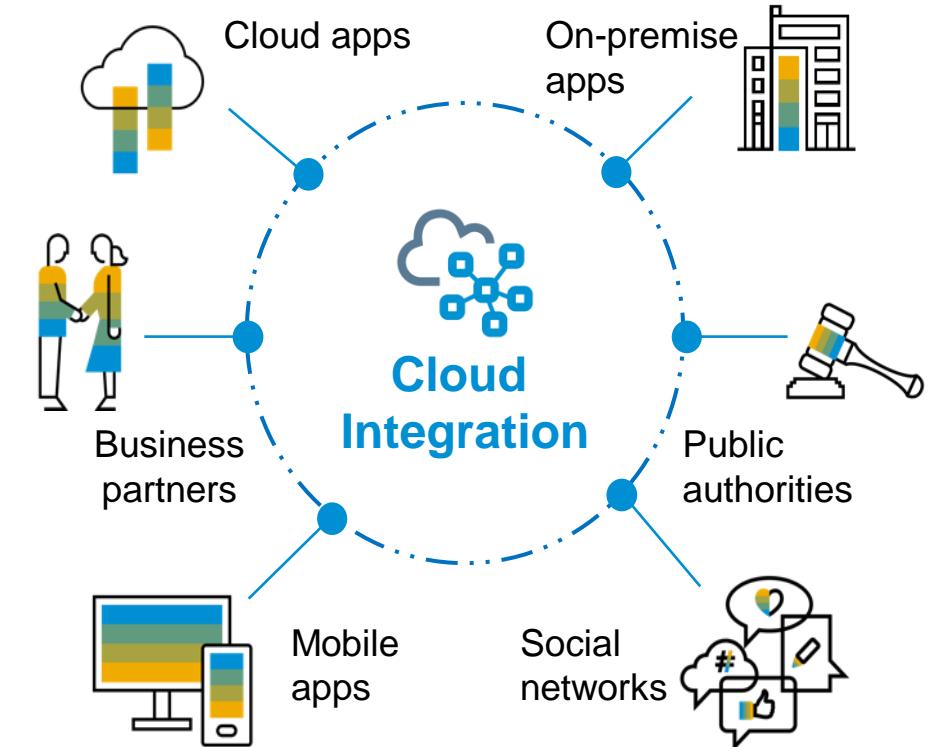
- Crowdsourcing capabilities for creating and maintaining integration content
- Designed to accelerate every interface implementation, to learn continuously, and to reduce efforts by 60% or more

Prepackaged content

- Prepackaged integration content to jump-start integration projects and get productive quickly
- Extension of pre-delivered content to include custom requirements

Ecosystem

- Ability to integrate with business networks
- Open to partners for developing integration content and adapters



Integration Advisor

Proposal service with machine learning approach

- Ready to start your integration projects without deep domain knowledge
- Designed to accelerate every interface implementation
- **Effort reduction 60% or more**

Crowdsourcing-based learnings

- From interface customizations and mappings
- Continuous learning

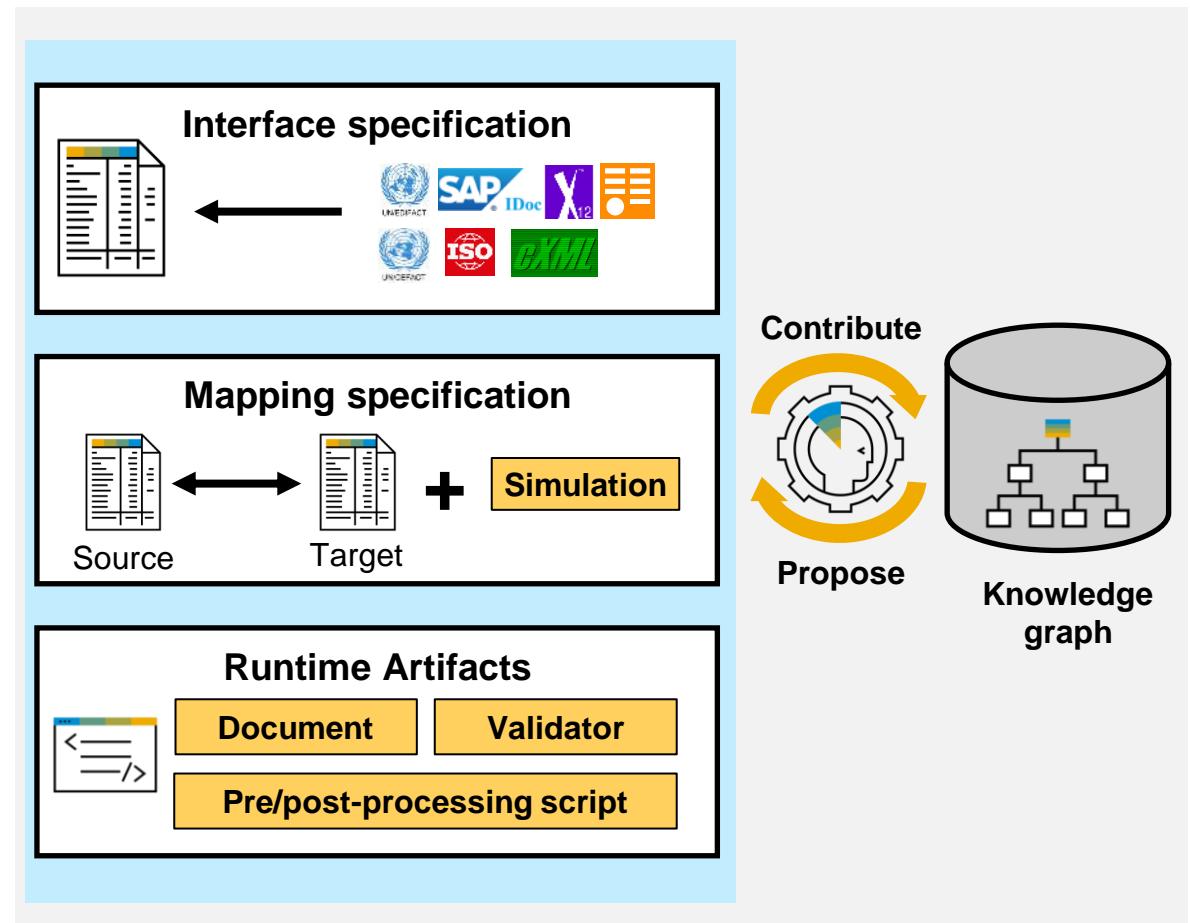
Automatic generation of documentation and runtime artifacts

Community collaboration

- Creating and maintaining tailored integration interfaces and mappings

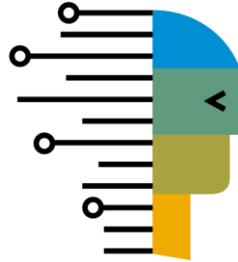
Outlook: trading partner management

- Maintenance of trading partner profiles and agreements



Introduction and overview

SAP API Management



APIs are digital building blocks for **modern apps** and **open integrations**. SAP API Management supports **full lifecycle management** of your APIs



Design your APIs based on open standards like Open API specification and OData

Develop your APIs by exposing and composing backend interfaces from apps or middleware

Protect your APIs from security threats, manage traffic, cache your data on the edge with 40+ in-built policies

Monitor and analyze your API usage, performance, and errors

Engage with application developers and monetize your digital assets through APIs

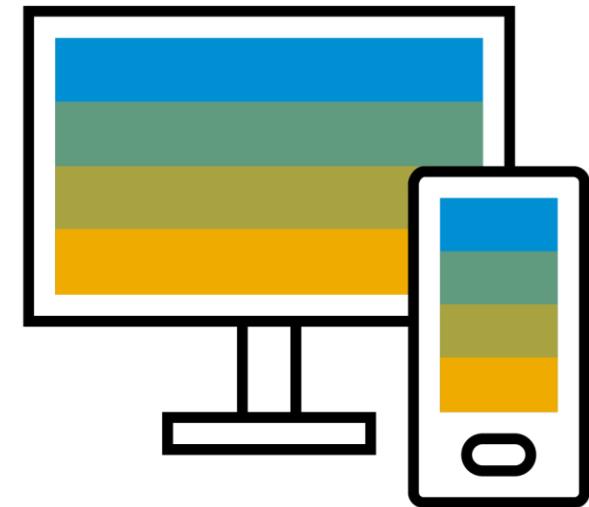
Open Connectors

Key capabilities

- Out-of-the-box connectors to 170+ non-SAP applications
- Select connectors you need and authenticate through providers
- Build your own connector with normalized features including authentication, pagination, errors, and search

Benefits

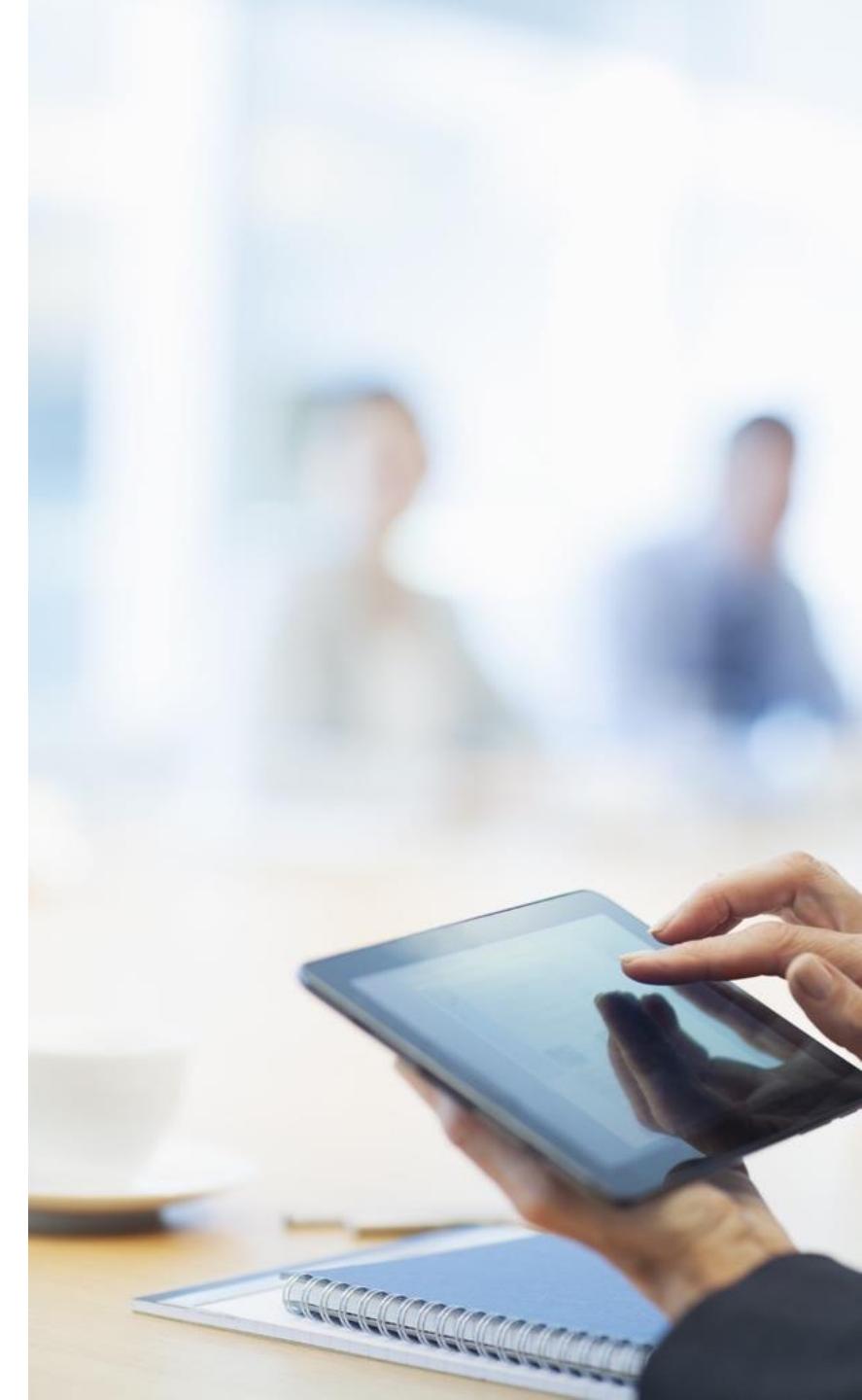
- Easily connect to top SaaS applications in use
- Open RESTful APIs and JSON data format easily embeddable within any product
- Power your business agility incorporating real-time data from non-SAP applications



SAP Integration Suite – What you've learned in this unit

SAP Integration Suite ...

- Is a versatile and enterprise-grade integration platform covering all integration styles and patterns, such as A2A, B2B / EDI, B2G, APIs, data, events, digital integration hub, etc.
- Offers out-of-the-box integration packs, APIs, events, and domain models to jump-start your integration projects
- Provides a rich set of connectivity options and standard adapters for A2A, B2B / EDI and B2G integration, including 170+ non-SAP SaaS connectors
- Is a fully vendor-managed multi-cloud service in major hyperscalers and provides the flexibility to run the same integration artifacts across multiple environments
- Simplifies integration with the power of artificial intelligence



Thank you.

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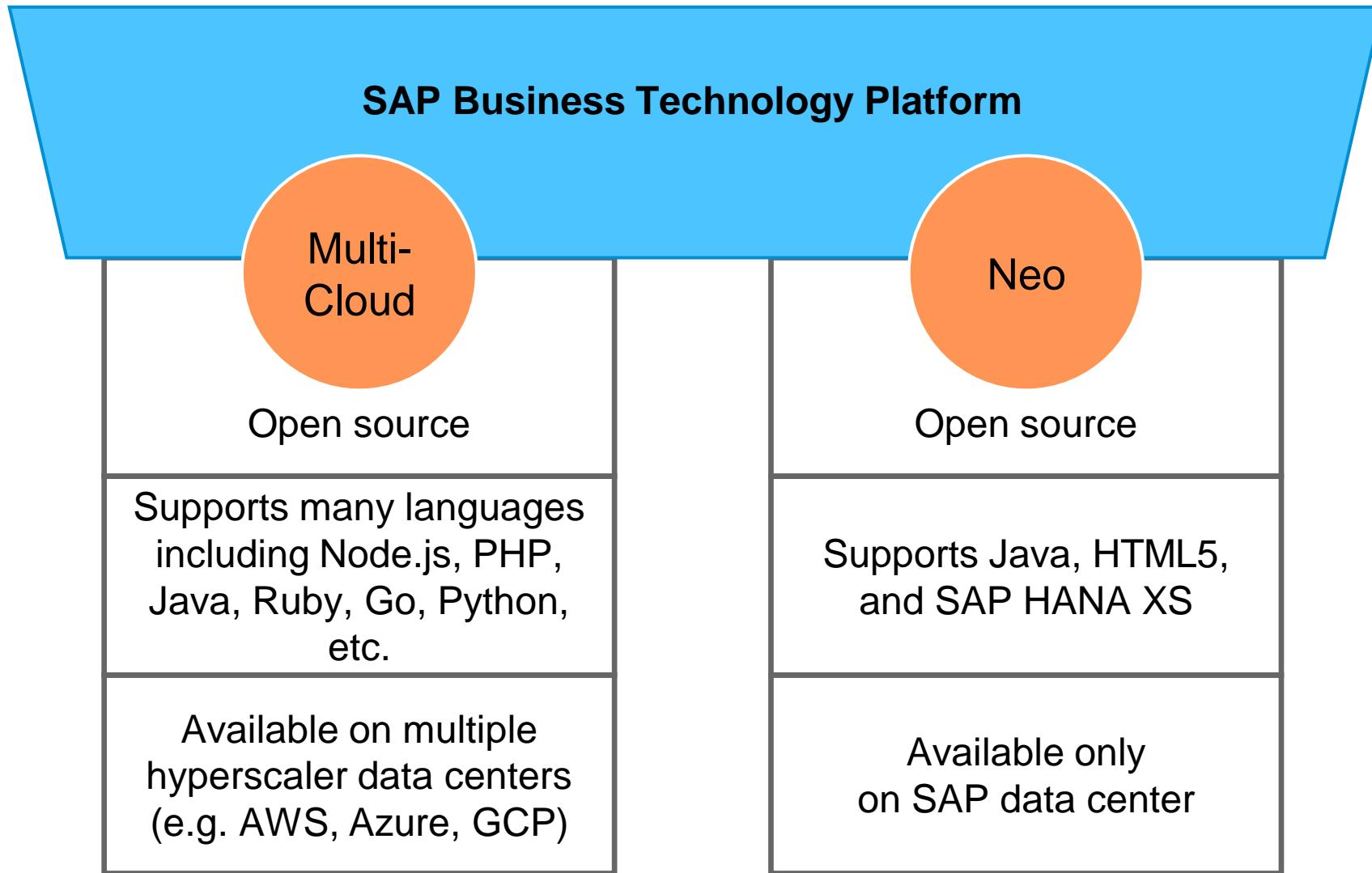
Week 1: Introduction

Unit 2: Provisioning and Setting Up an SAP Integration Suite Tenant

Licensing options

Trial	Consumption-based pricing	Subscription-based pricing
Free Register for a free trial account with SAP Business Technology Platform and get started with a shared environment quickly and easily. Benefits: <ul style="list-style-type: none">✓ Learn how to create cloud apps✓ Access a comprehensive set of platform services✓ Get early access to beta functionality	Custom price Configure and scale cloud services with business agility by accessing eligible services and simplified engagement instantly. What's included: <ul style="list-style-type: none">✓ Use eligible services without a new contract✓ Prepay consumption of services with credits✓ Renew your subscription at the end of the period✓ Pay in advance when cloud credits are used up✓ Add credits to your cloud account multiple times during a single consumption period	Custom price Receive a fixed price and length for access to subscribed services to consume and configure them as your business requires. This option is available for select services. What's included: <ul style="list-style-type: none">✓ Modify your contract to access more services✓ Pay a fixed cost, regardless of consumption✓ Pay in advance when the contract period starts✓ Renew the subscription at the end of the period

Types of environments



Personas and tasks



Global Account Admin

1. Create subaccount
2. Enable Cloud Foundry
3. Manage entitlements
4. Role assignment



Subaccount Admin

1. Subscribe Integration Suite
2. Assign capability-specific roles/role collection
3. Create service instance
4. Create service key



Tenant Admin

1. Activate & manage capabilities

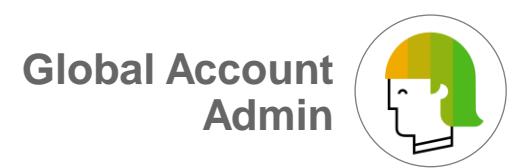


Integration Developer

1. Design and deploy integrations or APIs
2. Monitor and execute message processing

Provisioning and setting up an SAP Integration Suite tenant

Create subaccount and enable Cloud Foundry environment



New Subaccount

*Display Name: openSAP

Description:

Neo Environment:

*Provider: Amazon Web Services (AWS)

*Region: Europe (Frankfurt)

*Subdomain: openSAPSubdomain

Use for production [i]

Enable beta features [i]

Create Cancel

Subaccount: openSAP - Overview

Delete Subaccount

Subaccount Details

Subdomain: openSAPSubdomain
ID: [openSAPSubdomain](#)

Subscriptions

Available: 3
Active: 0

Cloud Foundry
You are not currently using Cloud Foundry capabilities.
Enable Cloud Foundry

Quota
No quotas are assigned

Create Cancel

Subaccount: openSAP - Overview

Delete Subaccount

Subaccount Details

Subdomain: openSAPSubdomain
ID: [openSAPSubdomain](#)

Subscriptions

Available: 3
Active: 0

Cloud Foundry

Org Name: myOrg_openSAPSubdomain
Org ID: 2afc1458-
Members: 1
API Endpoint: <https://api.cf.eu11.hana.ondemand.com>

Create Space

Spaces (1)

Name	Applications	Service Instances
mySpace_openSAP	0	0

Disable Cloud Foundry

Quota
No quotas are assigned

Provisioning and setting up an SAP Integration Suite tenant

Manage entitlements

Global Account Admin



SAP BTP Cockpit

Join our user survey! 609 Finny ?

Home [Europe (Rot)] / CPIS-Consumer-PPU-IAT / openSAP

Subaccount: openSAP - Entitlements

openSAP

Service	Plan	Assign Quota <i></i>	Subaccount Assignment	Remaining Global Quota	Actions
Cloud Service Management Service	service-operator-access		1 shared units <i></i>	1 shared units <i></i>	

Subaccount openSAP - Entitlements

Entitlements

All Categories

Entitlements available for this subaccount

- API Management, API portal
Monetize your data and digital assets with help of API Portal. Upsell and cro...
- API Management, developer portal
A Developer Portal allows you to onboard a developer, create applications, c...
- Cloud Identity Services
- Content Agent Service
SAP Content Agent service allows you to assemble the content into MTAR a...
- Integration Suite
Integrate applications, services, and systems across landscapes.
- Process Integration Runtime
Provides access to Process Integration runtime and APIs

Service Details: Process Integration Runtime

Available Plans

integration-flow
Creates an OAuth client which provides access to integration flows on the SAP Cloud Platform Integration runtime

api
Provides access to public APIs of SAP Cloud Platform Integration

Add 2 Service Plans Cancel

Provisioning and setting up an SAP Integration Suite tenant

Subscribe to SAP Integration Suite application

Subaccount Admin



Overview

Services

Service Marketplace

Instances and Subscriptions

Subscriptions

Cloud Foundry

Spaces

Quota Plans

Org Members

HTML5 Applications

Connectivity

Destinations

Cloud Connectors

Security

Home [Europe (Rot)] / openSAP

Subaccount: openSAP - Instances and Subscriptions

Cloud Foundry user-provided service instances do not appear on this page. To view and manage user-provided service instances, first, navigate to Cloud Foundry - Spaces, select your space, and then from Services, select Service Instances.

Create

Search All Services All Plans All Statuses

Instances (0) Subscriptions (0)

There are no service instances in this subaccount. Choose 'Create' to get started.

Subscriptions (0)

Applications to which your subaccount is currently subscribed

Application Plan

Subaccount: openSAP - Instances and

Cloud Foundry

Integration Suite

enterprise_agreement

Subscribed

Overview Roles

Roles by Role Template

Role Template	Role Name	Description	Attributes	Role Collections	Actions
IntegrationProvisioningAd...	IntegrationProvisioningAdmin	For provisioning and basic configuration of the Integration capabilities	0	1	+ edit delete

Learn more about how to [configure roles](#).

New Instance or Subscription

1 Basic Info

Enter basic info for your instance or subscription.

Service: * [Integration Suite](#)

Plan: * [enterprise_agreement](#)

Integration Suite

Plan: [enterprise_agreement](#)

Status: [Subscribed](#)

Overview Roles

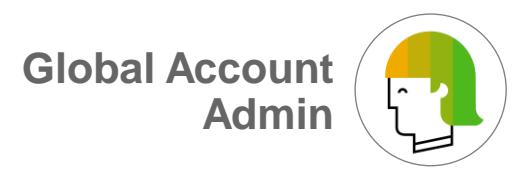
Roles by Role Template

Role Template	Role Name	Description	Attributes	Role Collections	Actions
IntegrationProvisioningAd...	IntegrationProvisioningAdmin	For provisioning and basic configuration of the Integration capabilities	0	1	+ edit delete

Learn more about how to [configure roles](#).

Provisioning and setting up an SAP Integration Suite tenant

Role assignment for provisioning



SAP BTP Cockpit

Home [Europe (Rot)] / CPIS-Consumer-PPU-IAT / openSAP

Subaccount: openSAP - Trust Configuration

All: 1

Establish Trust Manual Setup: [New Trust Configuration](#) [SAML Metadata](#)

Status	Name	Description
Default	SAP ID Service	Default identity provider

*E-Mail Address:

Show Assignments [Assign Role Collection](#)

Role Collection

Assign Role Collection

Role Collection: [Integration_Provisioner](#)

[Assign Role Collection](#) [Cancel](#)

Overview Services Subscriptions Cloud Foundry HTML5 Applications Connectivity Security Entitlements Usage Analytics

Service Marketplace Instances and Subscriptions

Cloud Connectors

Administrators Users Role Collections Roles Trust Configuration

Provisioning and setting up an SAP Integration Suite tenant

Activate capabilities



Subaccount: openSAP - Instances and Subscriptions

Cloud Foundry user-provided service instances do not appear on this page. To view and manage user-provided service instances, first, navigate to Cloud Foundry - Spaces, select your space, and then from Services, select Service Instances.

Search All Services All Plans All Statuses

Instances (0) Subscriptions (1)

Service instances created in: Cloud Foundry | Kyma/Kubernetes | Other environments

Instance	Service	Plan	Runtime Environment	Scope	Credentials	Status
There are no service instances in this subaccount. Choose 'Create' to get started.						

Subscriptions (1)

Applications to which your subaccount is currently subscribed

Application	Plan	Created On	Changed On	Status	...
Integration Suite	enterprise_agreement	23/03/2021	23/03/2021	Subscribed	>

Go to Application Manage Roles

Activate Capabilities

Select Capabilities

1. Select Capabilities

You are using the 'cpea' service plan to activate Integration Suite capabilities for the subdomain opensapsubdomain. For more details on the service plan and other capabilities, see SAP Note 2903776

Design, Develop and Operate Integration Scenarios
Support end-to-end process integration through the exchange of messages

Design, Develop and Manage APIs
Create simple digital experiences for your consumers, partners and employees

Extend Non-SAP Connectivity
Choose pre-built connectors from a catalog to seamlessly integrate SAP and non-SAP applications

Implement Interfaces and Mappings
Simplify Mapping Implementation

Next Cancel

SAP Integration Suite Home

Welcome to SAP Integration Suite

Simplify and accelerate enterprise integration and quickly transform your business into an Intelligent Enterprise

Capabilities

Develop and manage enterprise-wide integration across heterogeneous landscapes.

Looks like no capabilities have been added.

SAP Integration Suite Home

Welcome to SAP Integration Suite

Simplify and accelerate enterprise integration and quickly transform your business into an Intelligent Enterprise

Capabilities

Develop and manage enterprise-wide integration across heterogeneous landscapes.

Design, Develop, and Operate Integration Scenarios Cloud Integration Support end-to-end process integration through the exchange of messages.	Design, Develop, and Manage APIs API Management Create simple digital experiences for your consumers, partners, and employees.	Extend Non-SAP Connectivity Open Connectors Accelerate the connectivity with non-SAP cloud applications.	Implement Interfaces and Mappings Integration Advisor Develop interfaces and mappings by using crowdsourcing and machine learning.
---	--	--	--

Assign capability-specific role collectionsGlobal Account
Admin

Cloud Integration	PI_Business_Expert	<ul style="list-style-type: none"> ▪ Monitor integration flows and the status of integration artifacts ▪ Read the message payload and attachments
	PI_Administrator	<ul style="list-style-type: none"> ▪ Monitor integration flows and the status of integration artifacts ▪ Deploy security content ▪ Delete messages from transient data store
	PI_Integration_Developer	<ul style="list-style-type: none"> ▪ Create integration flows ▪ Monitor integration flows and the status of integration artifacts ▪ Deploy integration content such as integration flows

API Management	APIPortal.Administrator	Access the API portal user interface (UI) and services
	APIManagement.Selfservice.Administrator	Onboard to API portal and access its settings page
Integration Advisor	iadv-content-developer	Create and deploy interfaces and mappings
Open Connectors	OpenConnectors_User	View the Open Connectors capability tile on the SAP Integration Suite launchpad

Provisioning and setting up an SAP Integration Suite tenant

Create service instance

Subaccount Admin



Subaccount: openSAP - Instances and Subscriptions

Cloud Foundry user-provided service instances do not appear on this page. To view and manage user-provided service instances, first, navigate to Cloud Foundry - Spaces, select your space, and then from Services, select Service Instances.

Search All Services All Plans All Statuses

Instances (0) Subscriptions (1)

Service instances created in: [Cloud Foundry](#) | [Kyma/Kubernetes](#) | [Other environments](#)

Instance	Service	Plan
There are no service instances.		

New Instance or Subscription

1 Basic Info 2 Parameters 3 Review

Enter basic info for your instance or subscription.

Service: * [Process Integration Runtime](#)

Plan: * [integration-flow](#)

Runtime Environment: * [Cloud Foundry](#)

Space: * [dev](#)

Instance Name: * [Choose a CLI-friendly name for your instance](#)

Next > Create Cancel

- Create an instance of Process Integration Runtime from Service Marketplace or Instances and Subscriptions, which defines how a service of SAP BTP can be called from a remote component.

Detailed instructions in this [tutorial](#)



The screenshot shows the SAP Cloud Platform Integration Service Key creation interface. On the left, a sidebar displays 'Status' as 'Created'. The main area has a title 'New Service Key' and a 'Service key name:' field containing 'myOpenSAPServiceKey'. Below it is a section for 'Configure service key parameters' with an 'Upload a JSON file:' input field showing 'Select JSON file' and a 'Browse...' button. A large text area labeled 'Specify the parameters in JSON format:' contains a JSON document. This JSON document defines an 'oauth' object with fields like 'clientid', 'clientssecret', 'url', 'grant-types', 'roles', and 'tokenurl'. The 'grant-types' array includes 'refresh_token', 'urn:ietf:params:oauth:grant-type:saml2-bearer', 'client_credentials', 'password', and 'urn:ietf:params:oauth:grant-type:jwt-bearer'. The 'roles' array includes 'MonitoringDataRead' and 'WorkspaceArtifactsDeploy'. The 'tokenurl' field is set to 'https://api.cloud.sap/oauth/token'. On the right side of the JSON editor, there are 'Copy JSON', 'Download', and 'Close' buttons.

▪ Create a service key to access the Process Integration Runtime service instance, which contains credentials and other information that is required at a later step to call the integration flow.

A photograph showing a close-up of a person's hands typing on a laptop keyboard. The scene is bathed in warm, golden sunlight streaming through a window, creating a strong lens flare effect. The laptop screen is visible in the background, and the overall atmosphere is bright and focused.

Demo

Apple iCloud Yahoo Bing Google Wikipedia Facebook Twitter LinkedIn The Weather Channel Yelp TripAdvisor Personal SAP

SAP BTP Cockpit 606 Finny ?

Overview Subaccounts Resource Providers Boosters System Landscape Entitlements Members

Home [Europe (Rot)] / SAP

Global Account: SAP - Overview

Export

Global Account Info

Account ID: CA50244752TID000000000741512915
Account Type: CUSTOMER
Access: Standard

 25 Subaccounts  3 Regions

Service Usage

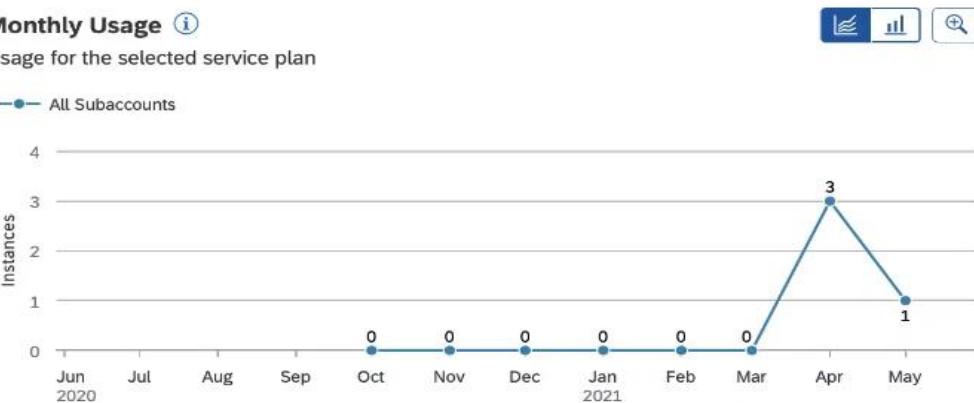
Service: Cloud Integration Subaccount: All Subaccounts Space: Period: Last 12 Months

Service Plan	Subaccounts	Available Regions	Usage in Current Month
Cloud Integration - Process Integration	3	Saudi Arabia (Riyadh) [n...]	1 instance

Monthly Usage

Usage for the selected service plan

All Subaccounts



Month	Instances
Oct 2020	0
Nov 2020	0
Dec 2020	0
Jan 2021	0
Feb 2021	0
Mar 2021	0
Apr 2021	3
May 2021	1

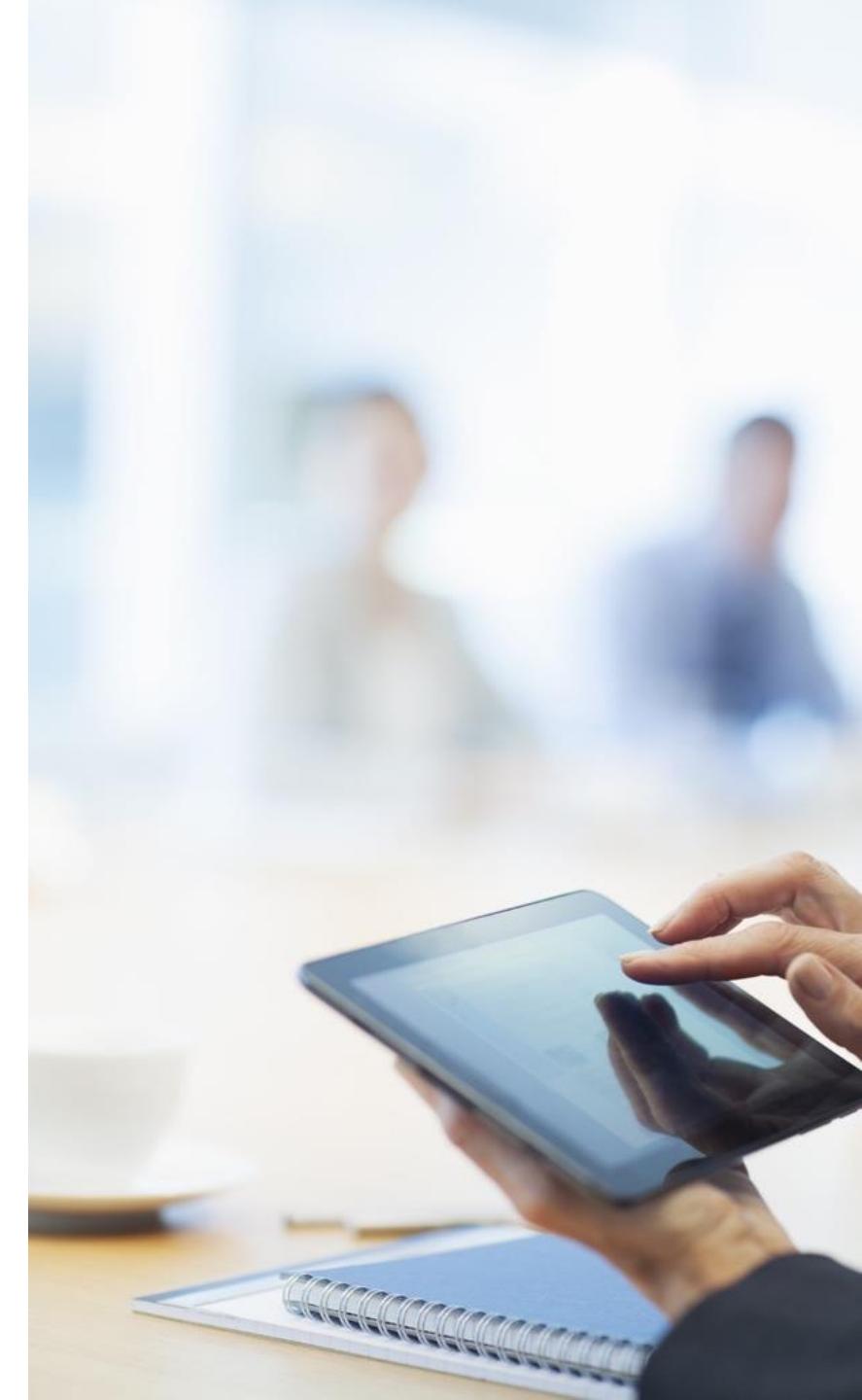
Subaccount Usage

Subaccount: All Subaccounts Space: Period: Last 12 Months

Summary

SAP offers its customers self-service enablement of SAP Integration Suite and its different capabilities: Cloud Integration, API Management, Integration Advisor and Open Connection for both consumption-based and subscription-based commercial models in the Cloud Foundry environment.

A customer who purchases a Cloud Platform Enterprise Agreement (CPEA) and cloud credits from SAP BTP can activate or deactivate the required services based on their operational requirements.



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Week 1: Introduction

Unit 3: Exploring Cloud Integration Tooling and Creating a First Integration Flow

Exploring Cloud Integration tooling and creating a first integration flow

Architecture overview

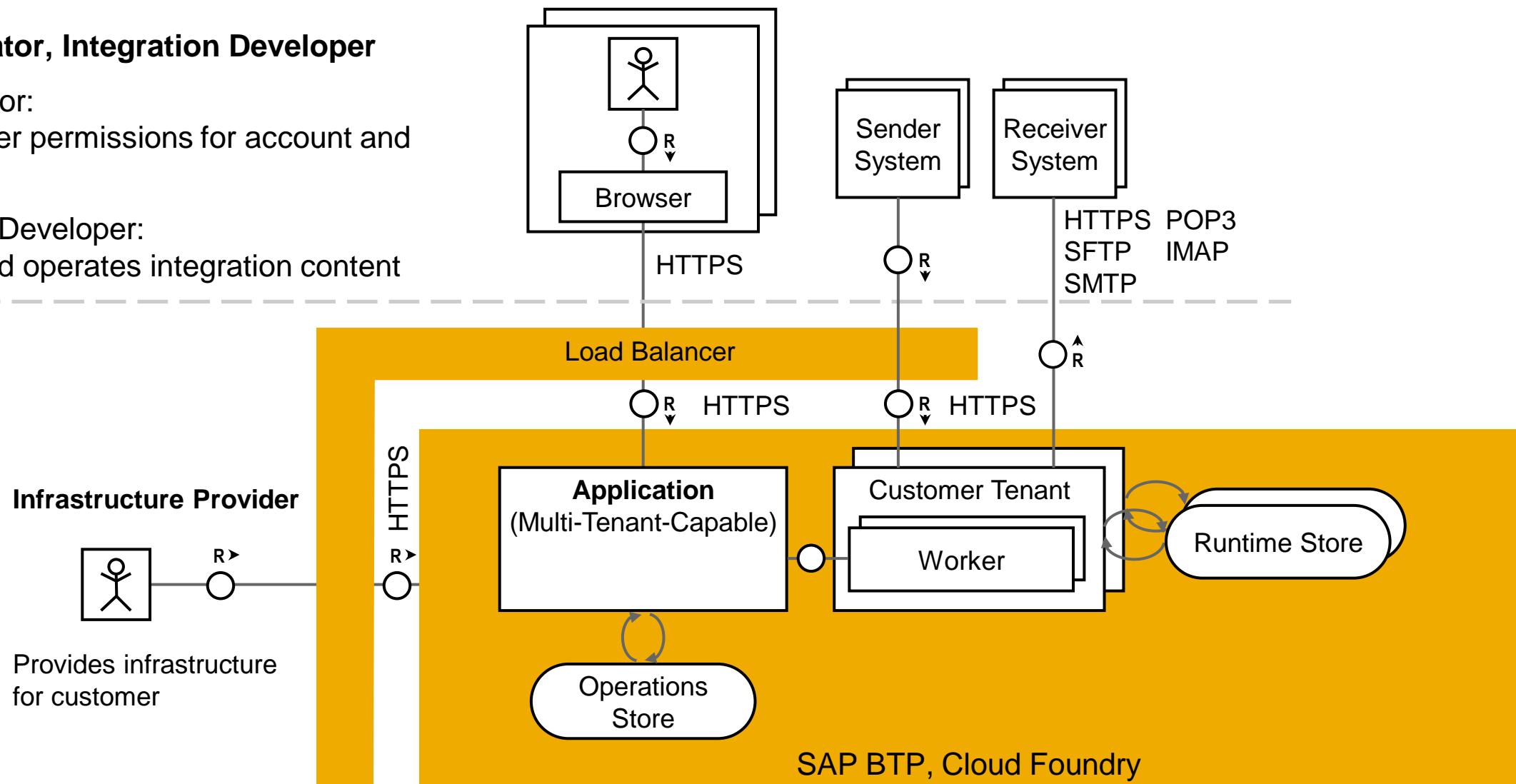
Administrator, Integration Developer

Administrator:

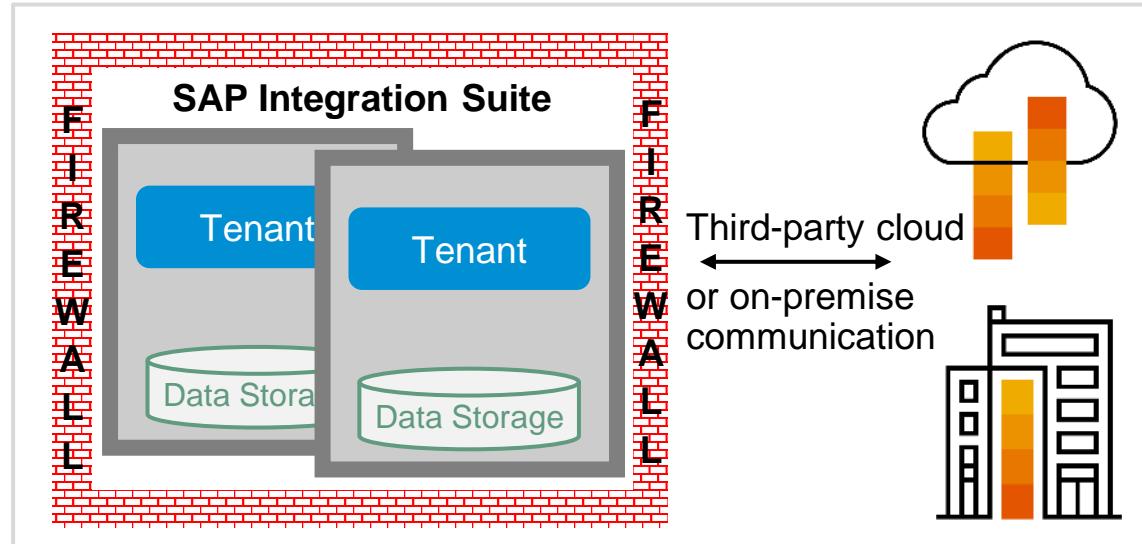
Manges user permissions for account and application

Integration Developer:

Designs and operates integration content

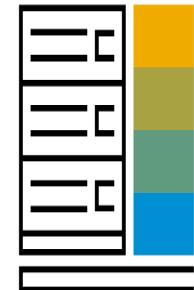


Security aspects



Secure ISO/IEC 27001 Certified Data Centers

- Hundreds of surveillance cameras with digital recording
- Fully monitored doors
- Tens of thousands of environment sensors
- Security and facility support team on site 24x7
- Biometric access to secured areas
- Multiple redundant Internet connections from multiple carriers
- Redundant data storage in two data center locations
→ [How Secure Is the Data Center?](#)



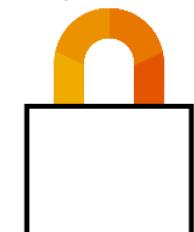
Secure Provisioning and Infrastructure

- Multi-tenancy
- Data isolation
- Audit logs
- Role-based access
- Data privacy and protection
- Data storage and backup



Secure Communication

- Authentication: Basic, Client Certificate, User Roles, OAuth
- Transport level: SFTP, HTTPS, SMTP, POP3, IMAP
- Message or payload level: encryption, decryption, signing, signature verification
- Secure storage of key stores in database
- Encrypted data persistency



Exploring Cloud Integration tooling and creating a first integration flow

Tooling introduction

The screenshot shows the SAP Integration Suite Home page. At the top, there's a banner with the text "Welcome to SAP Integration Suite" and a subtext "Simplify and accelerate enterprise integration and quickly transform your business into an Intelligent Enterprise". Below the banner is a stylized illustration of two people interacting with a digital interface. The main content area is titled "Capabilities" and describes "Develop and manage enterprise-wide integration across heterogeneous landscapes". There are two cards: one for "Design, Develop, and Operate Integration Scenarios" (Cloud Integration) and one for "Design, Develop, Manage APIs" (API Management). The right side of the screen shows the "Cloud Integration" section of the suite. It has a navigation bar with "Discover", "Design", "Monitor", and "Settings". Under "Discover", it says "Discover / Discover (308)". A search bar is present. Below the search bar, there are two adapter entries: "SugarCRM Adapter for SAP Integration Suite" and "Salesforce Adapter for SAP Integration Suite". Both entries include a brief description, a hexagonal icon, and links to "Published: a day ago", "Version: 1.0.1", and "Vendor: SAP".

Welcome to SAP Integration Suite
Simplify and accelerate enterprise integration and quickly transform your business into an Intelligent Enterprise

Capabilities
Develop and manage enterprise-wide integration across heterogeneous landscapes.

Design, Develop, and Operate Integration Scenarios
Cloud Integration
Support end-to-end process integration through the exchange of messages.

Design, Develop, Manage APIs
API Management
Create simple digital experiences for consumers, partners, and employees.

SAP Integration Suite Cloud Integration

Discover / Discover (308)

Discover

Design

Monitor

Settings

ALL

Search

SugarCRM Adapter for SAP Integration Suite
The SugarCRM Adapter facilitates and accelerates the implementation time of connecting to SugarCRM. It provides features that reduce the complexity of discovering SugarCRM entities and their properties.

Published: a day ago
Version: 1.0.1
Vendor: SAP

Salesforce Adapter for SAP Integration Suite
The Salesforce Adapter facilitates and accelerates the implementation time of connecting to Salesforce. It provides features that reduce the complexity of discovering Salesforce entities and their properties.

Published: a day ago
Version: 1.0.1
Vendor: SAP

Exploring Cloud Integration tooling and creating a first integration flow

Discover and consume prepackaged integration packs

- SAP delivers rich **prepackaged integration packs** for commonly used scenarios
- Prepackaged integration packs contain integration flows, value mappings, and documentation
- Jump-start your integration with minimal developer effort

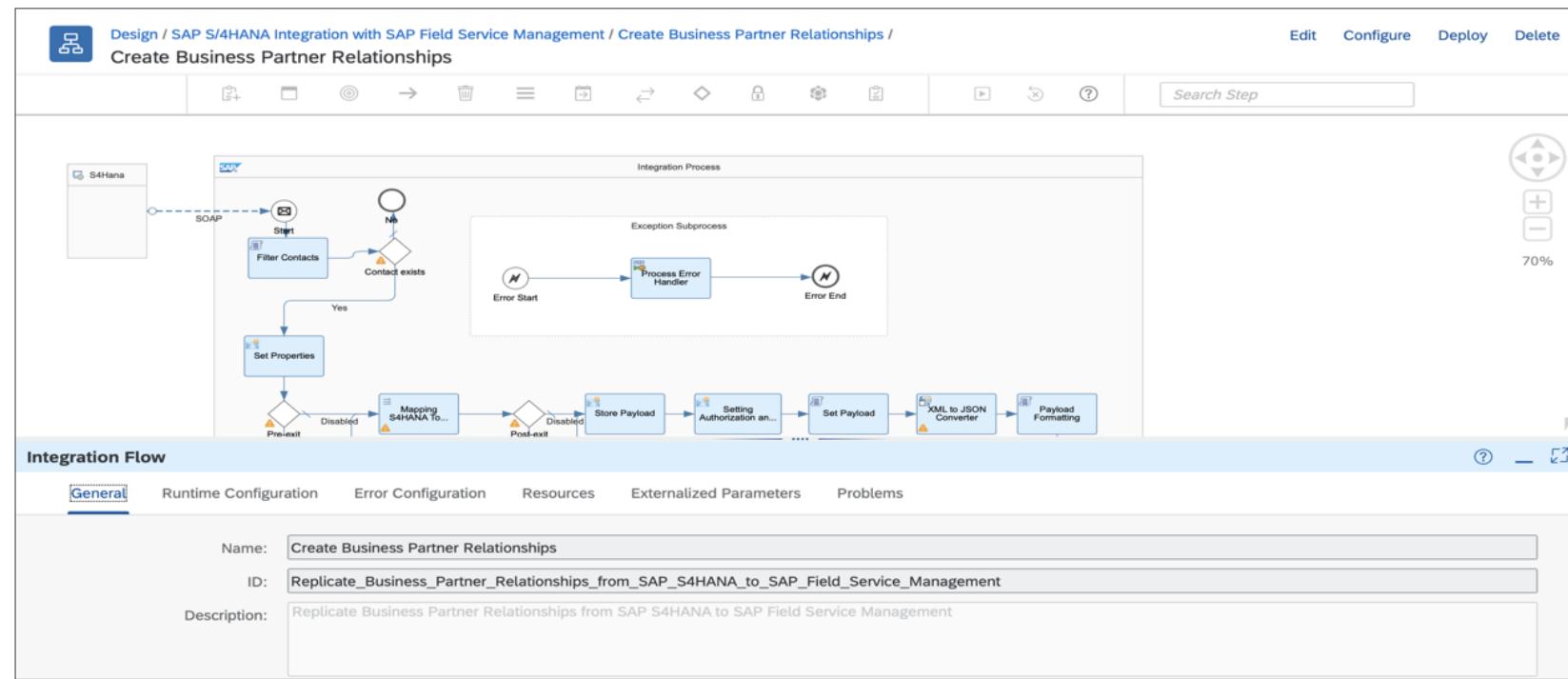
The screenshot shows the SAP Integration Suite interface with the 'Cloud Integration' tab selected. On the left, there's a sidebar with 'Discover', 'Design', 'Monitor', and 'Settings'. The main area is titled 'Discover / Discover (308)' and shows a list of integration packs. Two items are visible: 'SugarCRM Adapter for SAP Integration Suite' and 'Salesforce Adapter for SAP Integration Suite'. Each item has a brief description, publication details (published a day ago, version 1.0.1, vendor SAP), and a 'View' button.

Discover (Integration) / SAP S/4HANA Integration with SAP Field Service Management / SAP S/4HANA Integration with SAP Field Service Management				
Overview	Artifacts (14)	Documents (4)	Tags	Ratings
Name				Type
Create Business Partner Relationships Create Customer Contact Relationships from SAP S/4HANA to SAP Field Service Management				Integration Flow
Notify Service Call Update from SAP S/4HANA to SAP Field Service Management Update SAP Field Service Management Service Call Status to Technically Completed after SAP S/4HANA Service Order is completed.				Integration Flow
Notify Service Order Update from SAP Field Service Management to SAP S/4HANA Update S/4HANA When SAP Field Service Management Update				Integration Flow
Replicate Business Partner Address Replicate Business Partner Address from SAP S/4HANA to SAP Field Service Management				Integration Flow
Replicate Business Partner Contact Replicate Business Partner Contact from SAP S/4HANA to SAP Field Service Management				Integration Flow
Replicate Business Partners Replicate Business Partners from SAP S/4HANA to SAP Field Service Management				Integration Flow
Replicate Confirmed Service from SAP Field Service Management to SAP S/4HANA Create Confirmed Service after the Time and Material Journal are approved from SAP Field Service Management to SAP S/4HANA				Integration Flow
Replicate Products Replicate Products from SAP S/4HANA to SAP Field Service Management				Integration Flow
Replicate Service Order from SAP S/4HANA to SAP Field Service Management Create SAP Field Service Management Service Call after Service Order is released in SAP S/4HANA				Integration Flow
Route Payload from SAP Field Service Management to SAP S/4HANA Entrypoint Integration Flow From SAP Field Service Management to SAP S/4HANA				Integration Flow
Route Payload from SAP S/4HANA to SAP Field Service Management Entrypoint Integration Flow From SAP S/4HANA to SAP Field Service Management				Integration Flow
Update Service Order for Duplicate Activity from SAP Field Service Management to SAP S/4HANA Add new item to Service Order in SAP S/4HANA when the duplicate activity was created in Field Service Management.				Integration Flow
Value Mapping Between SAP S/4HANA and SAP Field Service Management Map values between SAP S/4HANA and SAP Field Service Management				Value Mapping
Value Mapping for Master Data Between SAP S/4HANA and SAP Field Service Management Map values for Master Data Between SAP S/4HANA and SAP Field Service Management				Value Mapping

Exploring Cloud Integration tooling and creating a first integration flow

Design and develop integration flows

- Design your integration flows to define how messages can be processed and exchanged between sender and receiver systems.
- You specify the desired integration pattern by adding a dedicated integration flow step or a combination of various integration flow steps to an integration flow.
- You have the option to specify which technical protocols should be used to connect a sender or a receiver to the tenant.

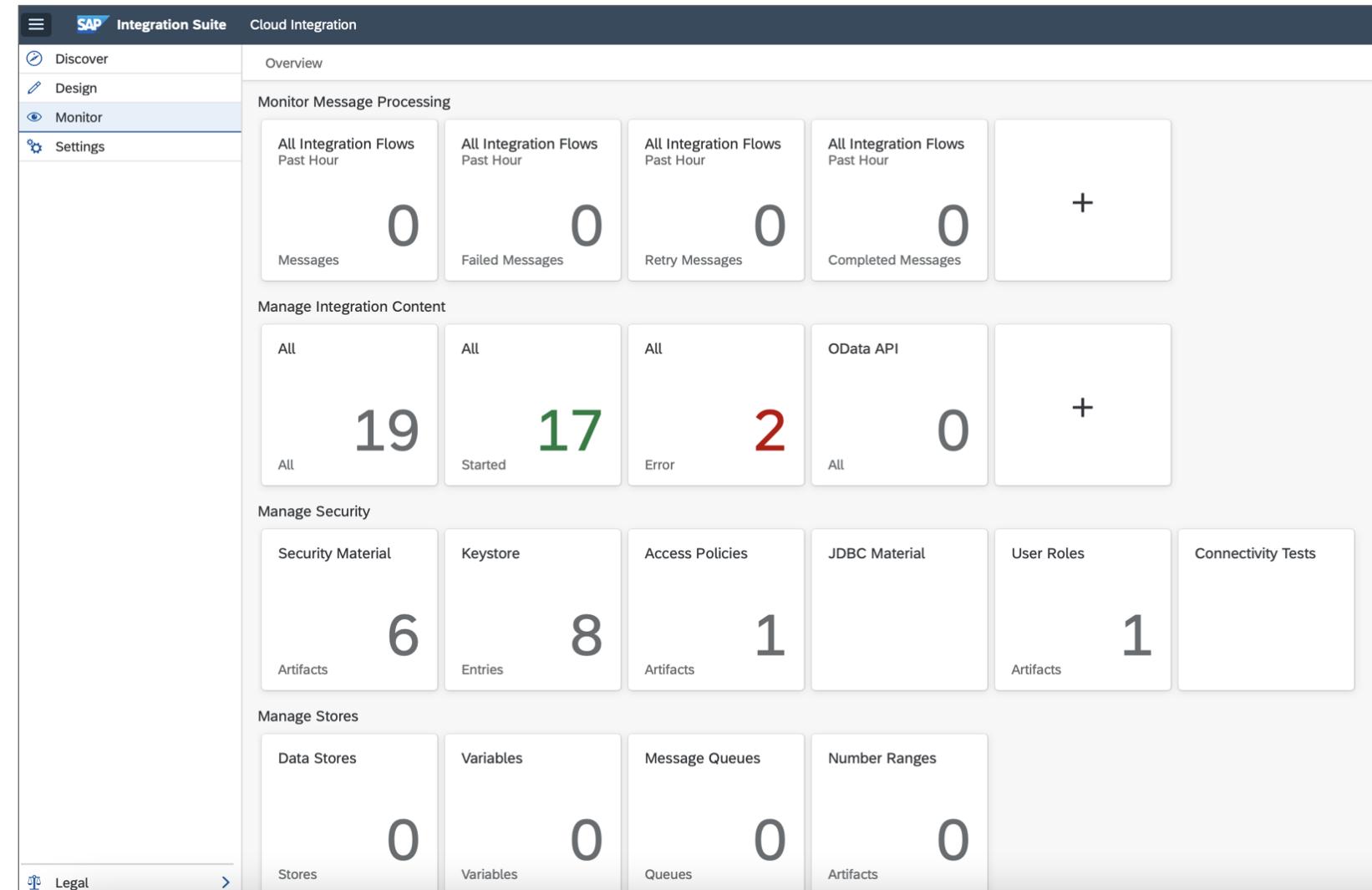


Adapter Type	Cancel
AMQP	
Ariba	
AS2	
AS4	
FTP	
HTTPS	
IDOC	
JMS	
Kafka	
Mail	
OData	
ProcessDirect	
FTP	
HTTPS	
IDOC	
JMS	
Kafka	
Mail	
OData	
ProcessDirect	
SFTP	
SOAP	
SuccessFactors	
XI	

Exploring Cloud Integration tooling and creating a first integration flow

Monitor integration flows

- Monitor message processing
- Manage integration content
- Manage security artifacts like user credentials and keystores
- Manage access policies
- Test connectivity to a receiver system
- Manage stores
- Manage locks



Exploring Cloud Integration tooling and creating a first integration flow

Configure Product Profiles, Transport, ES Repository, and Custom Tags

Product Profiles	Transport	ES Repository	Custom Tags
Manage Product Profiles			
Name			
SAP Cloud Integration			
SAP Process Orchestration 7.50, SP05			
SAP Process Orchestration 7.50, SP06			
SAP Process Orchestration 7.50, SP07			
SAP Process Orchestration 7.50, SP08			
SAP Process Orchestration 7.50, SP09			
SAP Process Orchestration 7.50, SP10			
SAP Process Orchestration 7.50, SP11			
SAP Process Orchestration 7.50, SP12			
SAP Process Orchestration 7.50, SP13			
SAP Process Orchestration 7.50, SP14			
SAP Process Orchestration 7.50, SP15			
SAP Process Orchestration 7.50, SP16			
SAP Process Orchestration 7.50, SP17			
SAP Process Orchestration 7.50, SP18			

Product Profiles	Transport	ES Repository
Transport Mode :		
<input type="button" value="CTS+ Direct"/>		
None		
<input type="button" value="CTS+ Direct"/>		
MTAR Download		
Transport Management Service		

Product Profiles	Transport	ES Repository
*Name:	myESR	
*Address:	http://myVirtualHost:8443	
*Credential Name:	myCredentials	
Location ID:	myLocationID	

Product Profiles	Transport	ES Repository	Custom Tags	Malware Scanner
Add custom tags to organize integration packages based on your business need. Learn more about Custom Tags .				
Show Column Info				
Name	Mandatory	Permitted Values		
<input type="text"/>	<input checked="" type="checkbox"/>	Optional permitted values...		

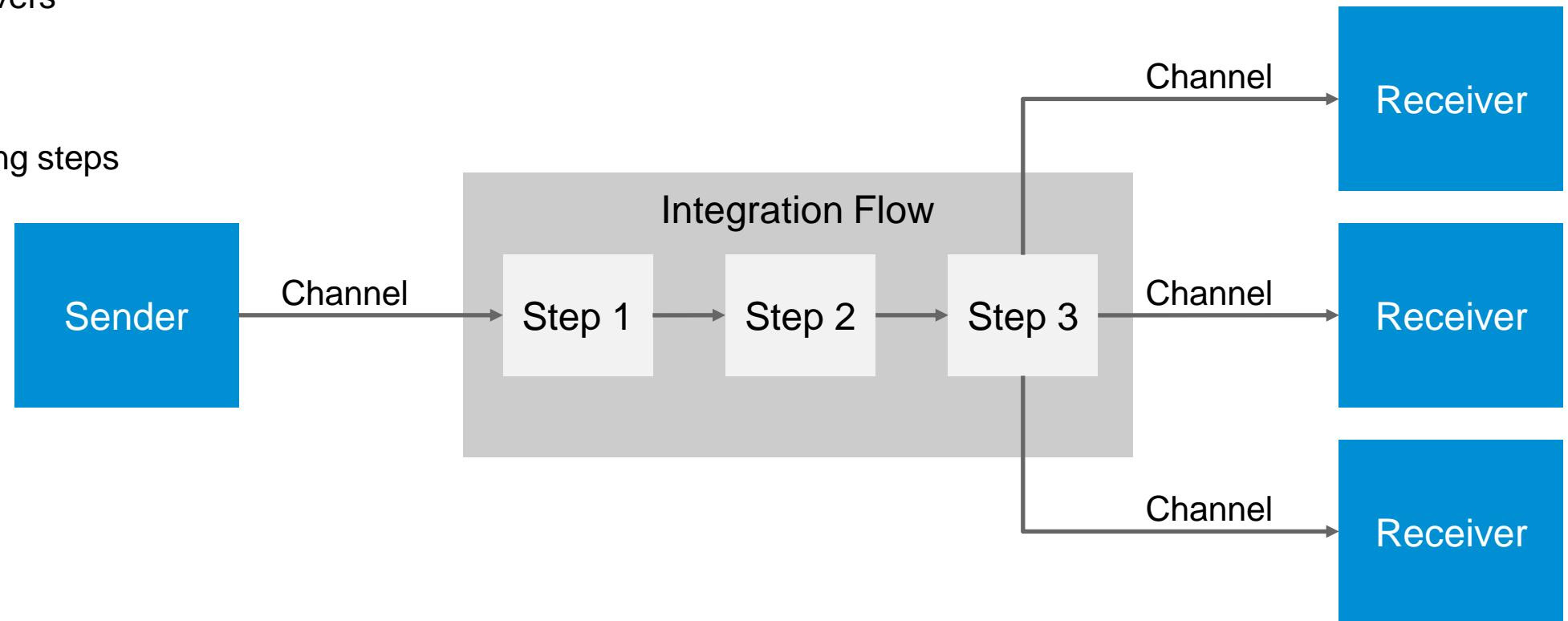
Product Profiles	Transport	ES Repository	Custom Tags	Malware Scanner
Activate the feature to scan for malware when a user uploads files like integration artifacts and their For files of larger size, the malware scanner can take a longer time to upload.				
Malware Scan: <input checked="" type="checkbox"/>				

Integration flow

An integration flow allows you to specify how a message is processed on a tenant.

Components of an integration flow:

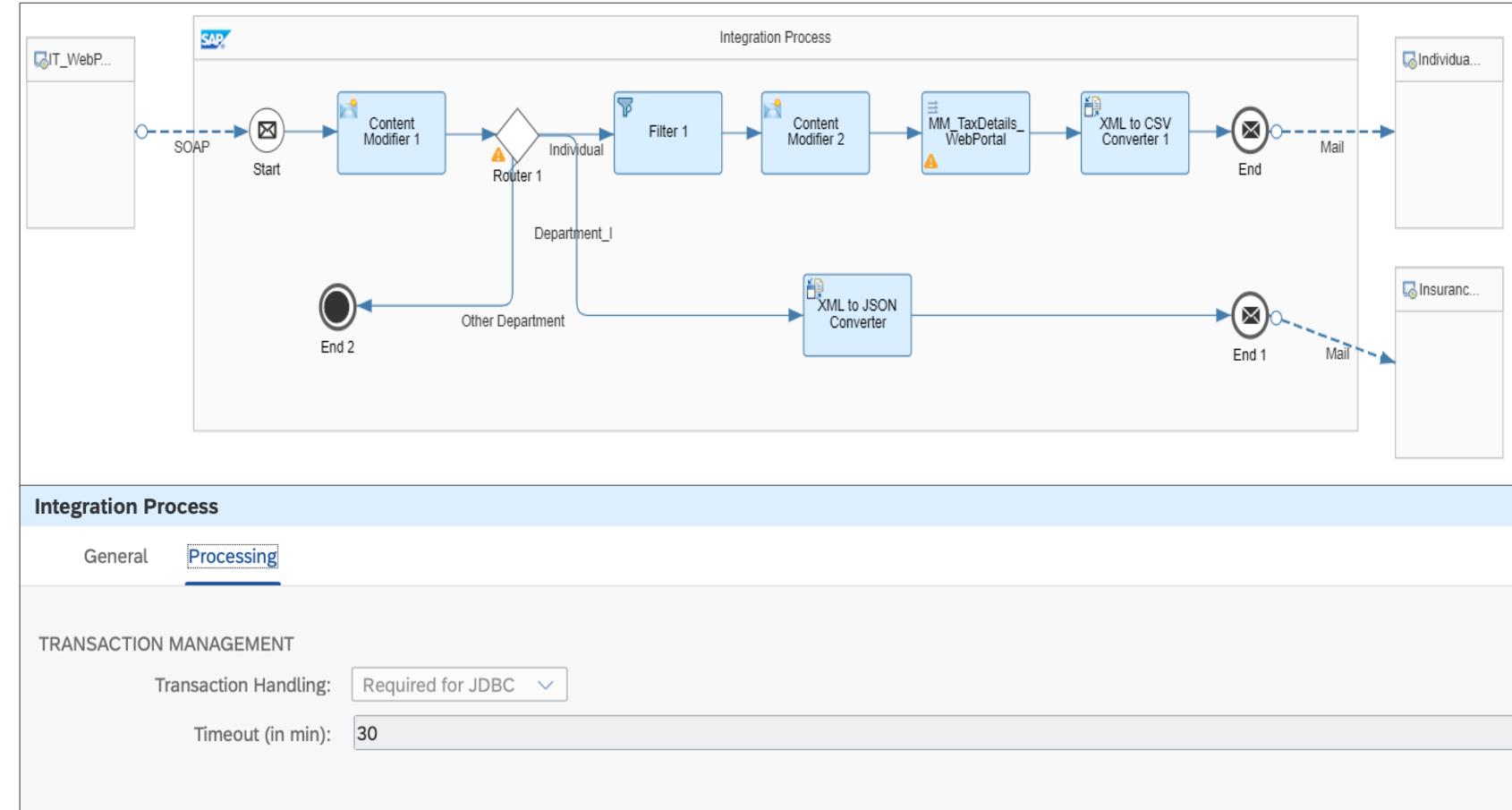
- Senders and receivers
- Adapters
- Pools
- Message processing steps



Pools: integration process

An integration process is an executable, cross-system process for processing messages.

In an integration process, all the process steps that are to be executed and the parameters relevant for controlling the process are defined.



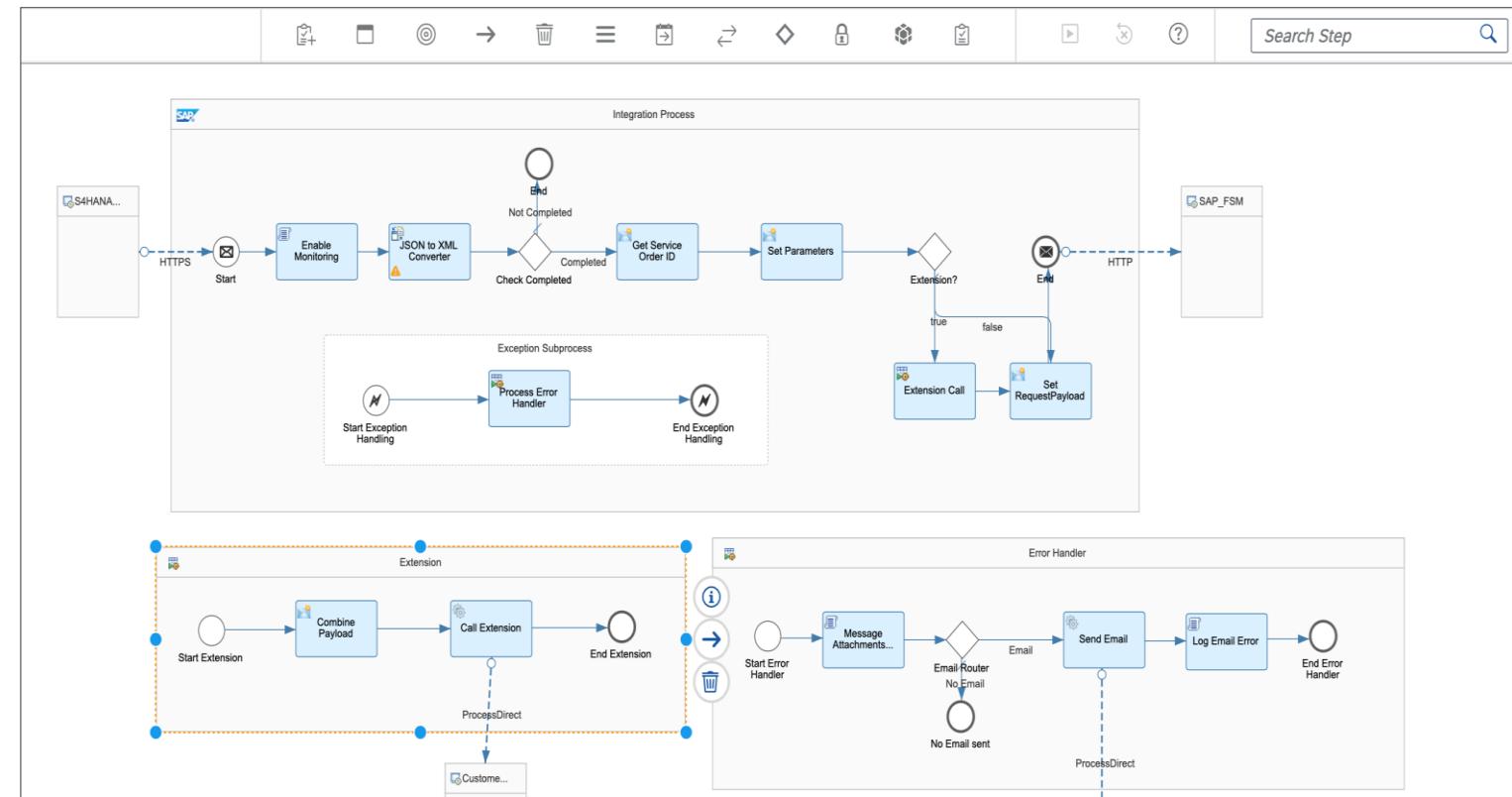
Exploring Cloud Integration tooling and creating a first integration flow

Pools: local integration process

You can use the local integration process to simplify your integration process by modularizing the main integration process into smaller fragments.

Ways of calling a local integration process:

- **Process Call** – Use this step to call the local integration process from the main integration process
- **Looping Process Call** – Use this step to call a local integration process multiple times, based on the XPath or non-xml-based condition

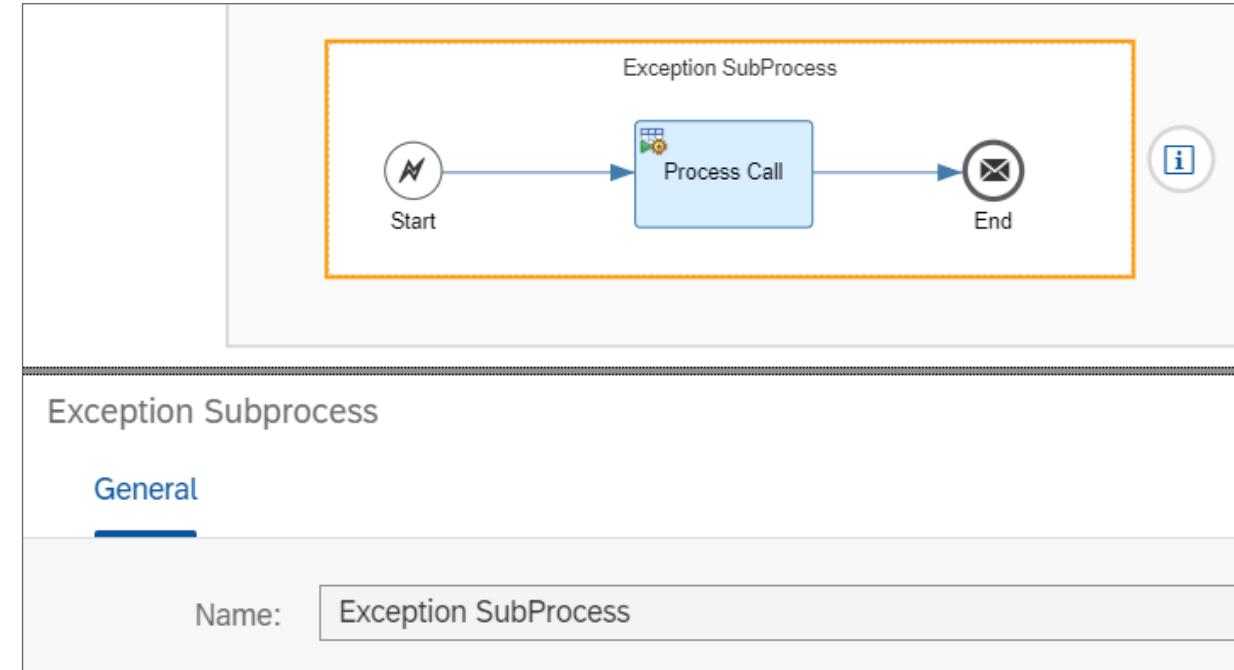


Pools: exception subprocess

An exception subprocess enables you to catch and handle exceptions thrown in the integration process or local integration process and perform any additional processing on it.

Note:

- You can use an End Message event to wrap the exception as a fault message in the payload and send it back to the sender.
- The following steps are not supported in an exception subprocess: Start Message, Terminate Message, Timer Start, Start Event, End Event, Router.



Exploring Cloud Integration tooling and creating a first integration flow

Events



- Start Message

First step of an integration process if the process is triggered by the Sender and not scheduled (with Timer)



- End Message

Last step of an integration process before the message is delivered to the Receiver



- Terminate Message

Used to terminate the process without sending the message to the Receiver



- Error Start Event

Used only in the exception subprocess and acts as the starting point, if any exception occurs in the integration process



- Error End Event

Used to throw the exception back to exception handlers



- Escalation

Does not abort the integration flow processing as a whole but only throws the Escalation Event and sets the MPL status to "Escalated". For synchronous messages, an error message is sent to the sender



- Start Event

Start of local integration process



- End Event

End of local integration process



- Timer

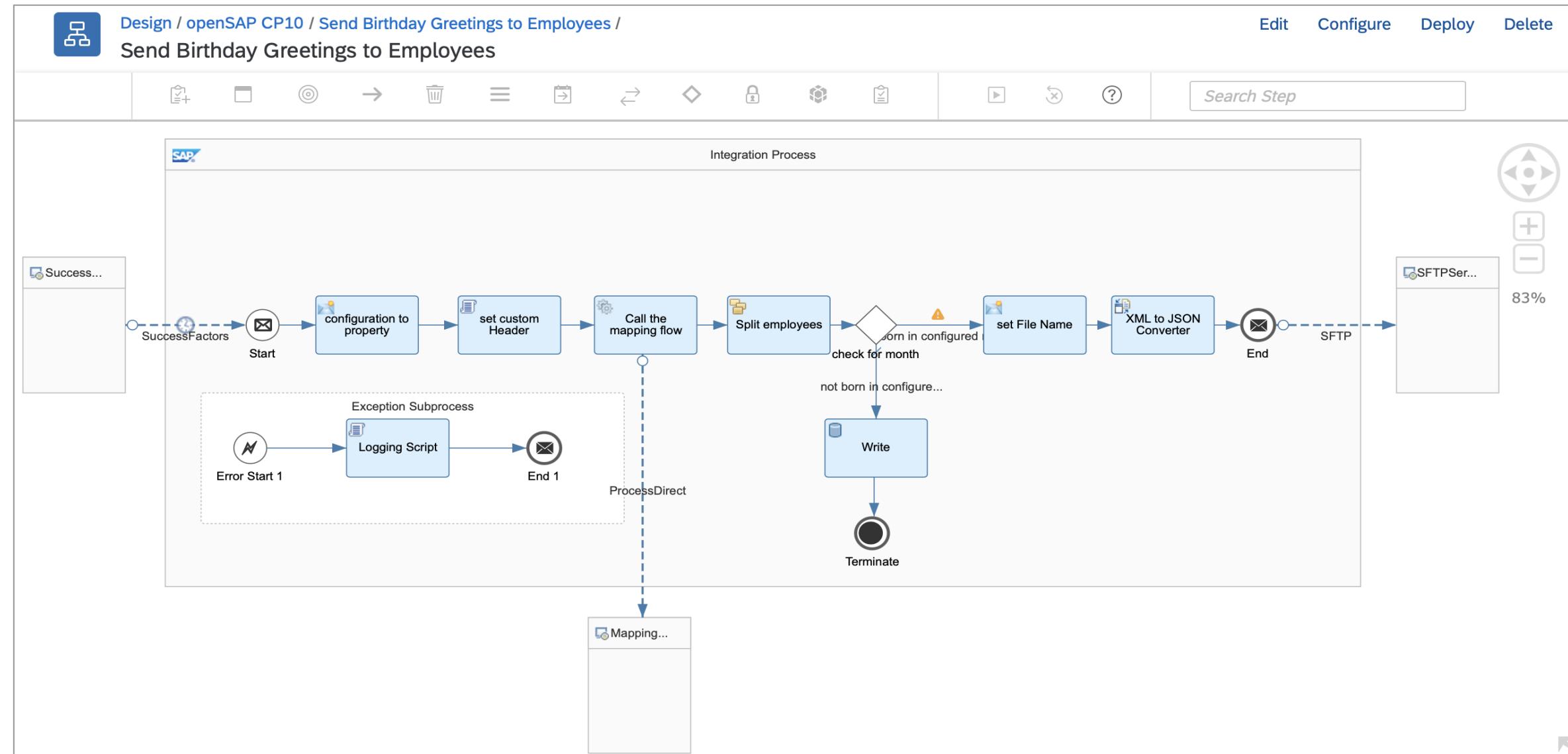
Used to configure a process to automatically start on a particular schedule

A photograph showing a close-up of a person's hands typing on a laptop keyboard. The scene is bathed in warm, golden sunlight streaming through a window, creating a strong lens flare effect. The laptop screen is visible in the background, and the overall atmosphere is bright and focused.

Demo

Exploring Cloud Integration tooling and creating a first integration flow

Demo scenario



Home [Europe (Rot)] > SAP > openSAP > Instances and Subscriptions - SAP BTP Cockpit

SAP Integration Suite



Welcome to SAP Integration Suite

Simplify and accelerate enterprise integration and quickly transform your business into an Intelligent Enterprise

Capabilities

Develop and manage enterprise-wide integration across heterogeneous landscapes.

...

 Design, Develop, and Operate Integration Scenarios

Cloud Integration

Support end-to-end process integration through the exchange of messages.

...

 Design, Develop, and Manage APIs

API Management

Create simple digital experiences for your consumers, partners, and employees.

...

 Extend Non-SAP Connectivity

Open Connectors

Accelerate the connectivity with non-SAP cloud applications.

...

 Implement Interfaces and Mappings

Integration Advisor

Develop interfaces and mappings by using crowdsourcing and machine learning.

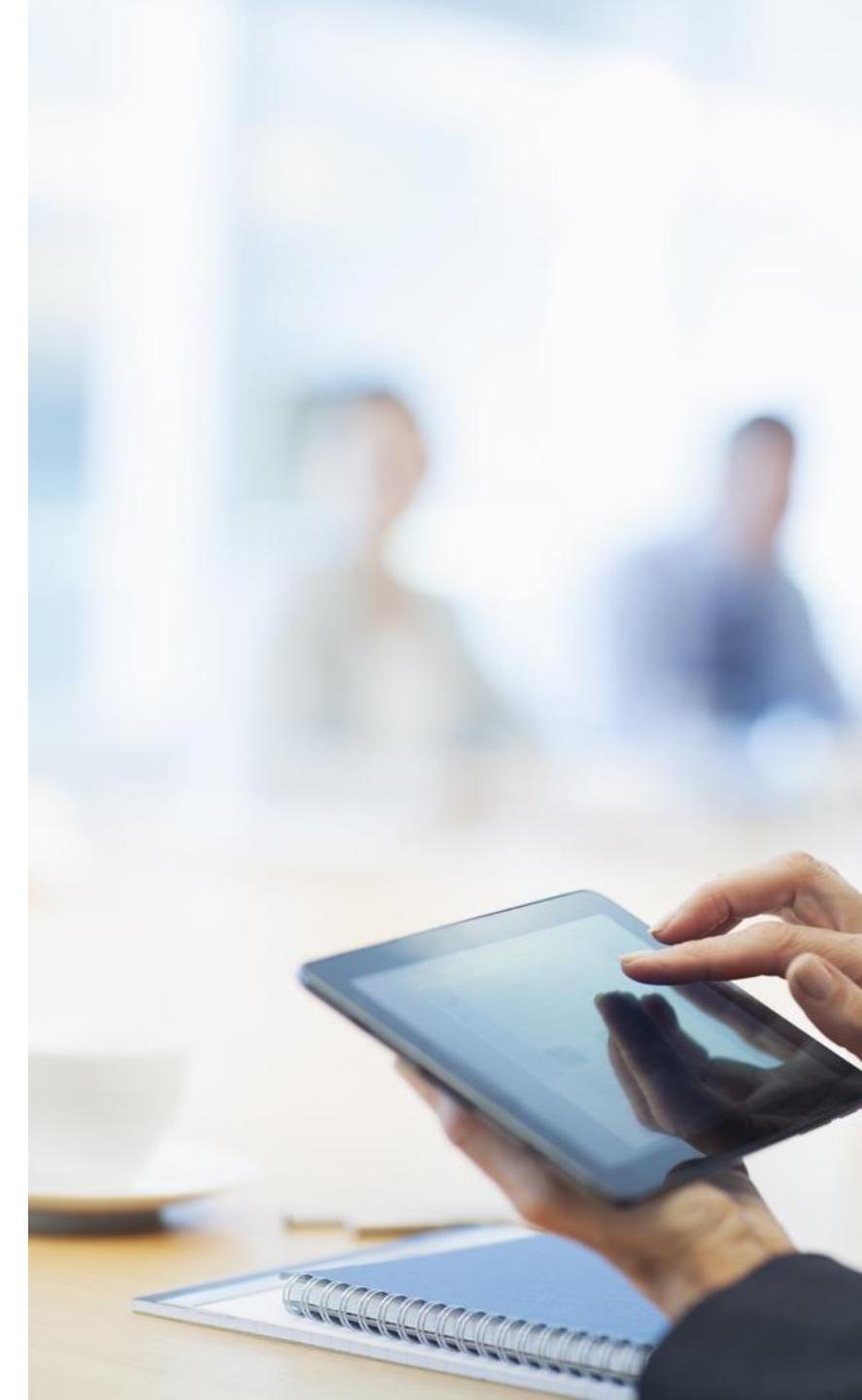


Manage Capabilities

Summary

Cloud Integration tooling provides the following main sections:

- **Discover** – where you can find prepackaged integration content provided by SAP and partners that you can use out of the box and adapt to your requirements.
- **Design** – where you design your integration content using a graphical integration flow modeling environment.
- **Monitor** – where you can monitor your integration flow and manage additional artifacts that you need to deploy on your tenant to complement your integration flows.
- **Settings** – where you can configure Product Profiles, Transport ES Repository, Custom Tags and Malware scanner for your Cloud Integration tenant.



Thank you.

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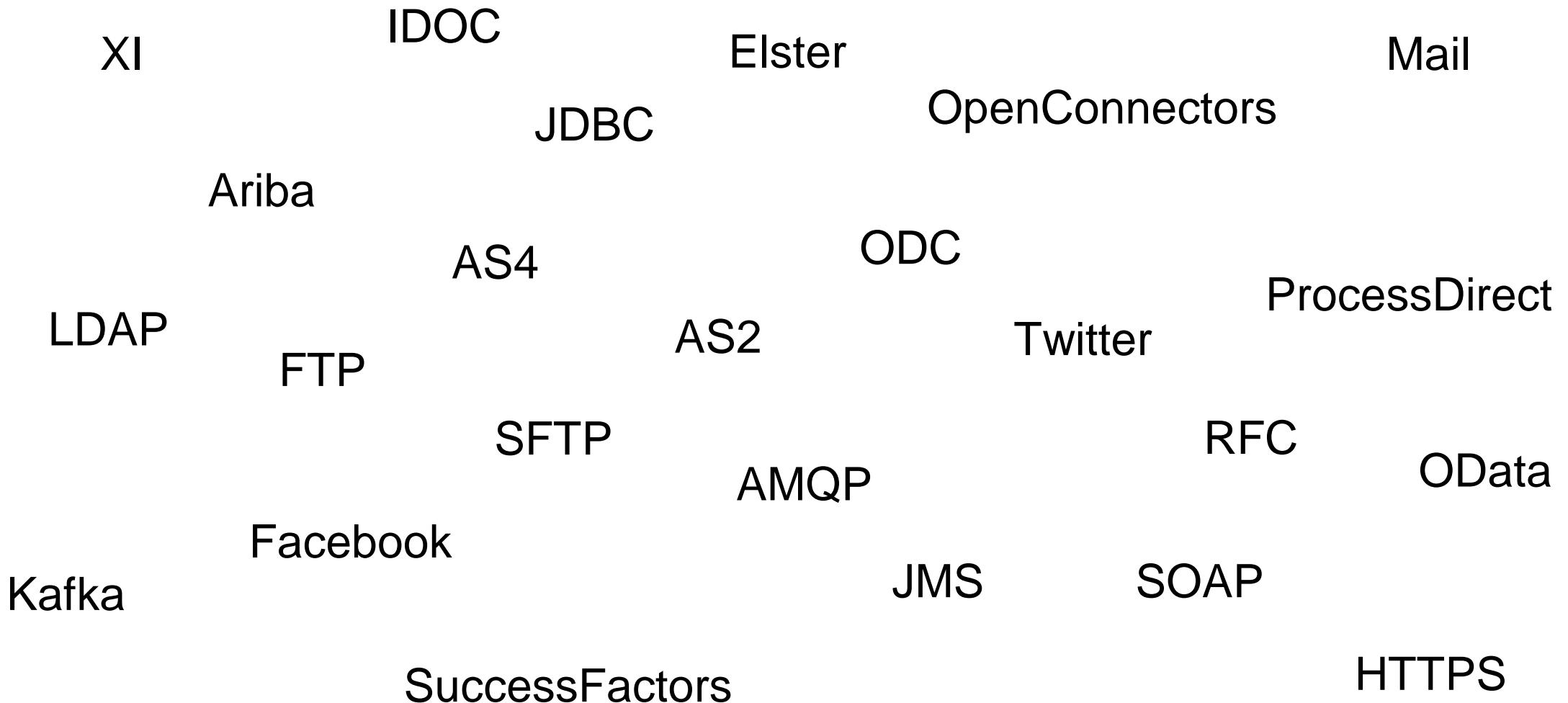


Week 1: Introduction

Unit 4: Connecting Cloud and On-Premise Applications with Out-of-the-Box Adapters

Connecting cloud and on-premise applications with out-of-the-box adapters

Standard adapters



Connecting cloud and on-premise applications with out-of-the-box adapters

Pushing vs. polling integrations

Pushing sender adapters provide an endpoint that can be called by external senders.

- Parallel executions possible
- Execution schedule not configurable but controlled by incoming messages

Polling sender adapters run at scheduled times and pick up the data from the source system.

- Only one execution at a time
- Configurable execution schedule

The screenshot shows the 'Scheduler' tab selected in a configuration interface. On the left, there are three radio button options: 'Run Once', 'Schedule on Day', and 'Schedule to Recur'. The 'Schedule to Recur' option is selected. To its right, under 'Schedule to Recur', is a dropdown menu set to 'Daily'. Below it are two radio button options: 'On Time' and 'Every', with 'Every' being selected. Next to these are input fields for time and duration: '07:40 PM' with a clock icon, '10 min' with a dropdown arrow, and a 'Between' range from '00:00' to '24:00' with dropdown arrows. At the bottom, a 'Time Zone' dropdown is set to '(UTC 0:00) Greenwich Mean Time(Etc/GMT)'.

Connecting cloud and on-premise applications with out-of-the-box adapters

Adapters with retry

Why a retry?

- Connections to external endpoints and even whole integration scenarios can fail due to temporary issues.
- Some senders cannot retry the message.
- A direct retry on the Cloud Integration side could solve the problem.

Re-delivery to external targets, no re-processing of the integration flow

- XI receiver adapter (configurable for Delivery Assurance Exactly Once (EO))
- Kafka receiver adapter (configurable)
- SFSF receiver adapter (5 retries with 3 min. pause between each retry)

Re-processing of the integration flow

- XI sender adapter (configurable for Delivery Assurance EO / ALO)
- AS2 / AS2 MDN sender adapter (configurable for Delivery Assurance EO)
- AS4 sender adapter (configurable for Delivery Assurance EO / ALO)
- All polling sender adapters (SFTP / FTP / Mail / Ariba / SuccessFactors)
- All sender adapters connected to a broker (JMS, AMQP, Kafka)



Connecting cloud and on-premise applications with out-of-the-box adapters

Size restriction

Why?

- Integration scenarios are designed for a certain size of incoming messages
 - Can the receiver handle that amount of data?
 - Can my storage keep that amount of data
 - Is the memory of my tenant capable of processing that amount of data?
- External senders cannot be controlled
- How to prevent senders from exceeding the expected size?

General	Connection	WS-Security	Conditions
MAXIMUM MESSAGE SIZE			
Body Size (in MB):		40	
Attachments Size (in MB):		100	

How?

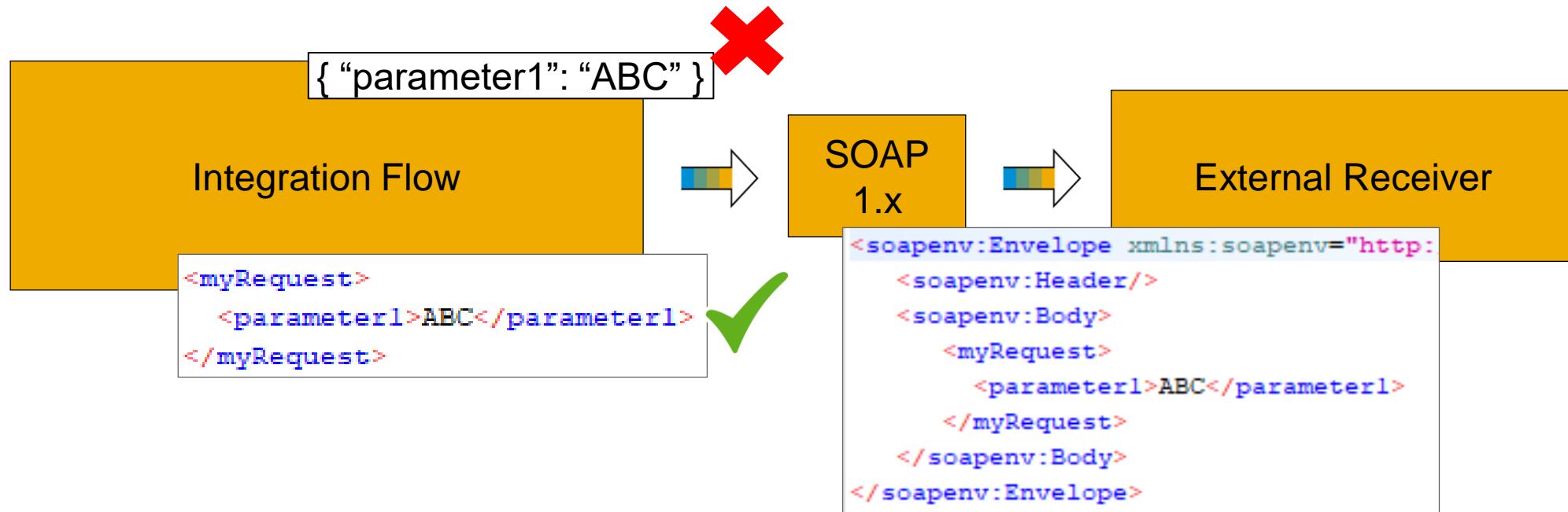
- Body and attachment size restriction in the *sender adapter*
- Sender will receive an exception with HTTP response code 413

▪ HTTP	▪ XI
▪ SOAP	▪ AS4
▪ IDOC	

General	Connection	Conditions	
MAXIMUM MESSAGE SIZE			
Body Size (in MB):			40

Pre-processing and post-processing of adapters

- Some adapters transform the payload (Web Services, OData...)
- Payload needs the correct format, for example, XML for SOAP adapter
- Holds true for internal/external requests/responses



Note: Similar for SAP RM, OData, SuccessFactors, IDOC, XI

Connecting cloud and on-premise applications with out-of-the-box adapters

ProcessDirect adapter

Why?

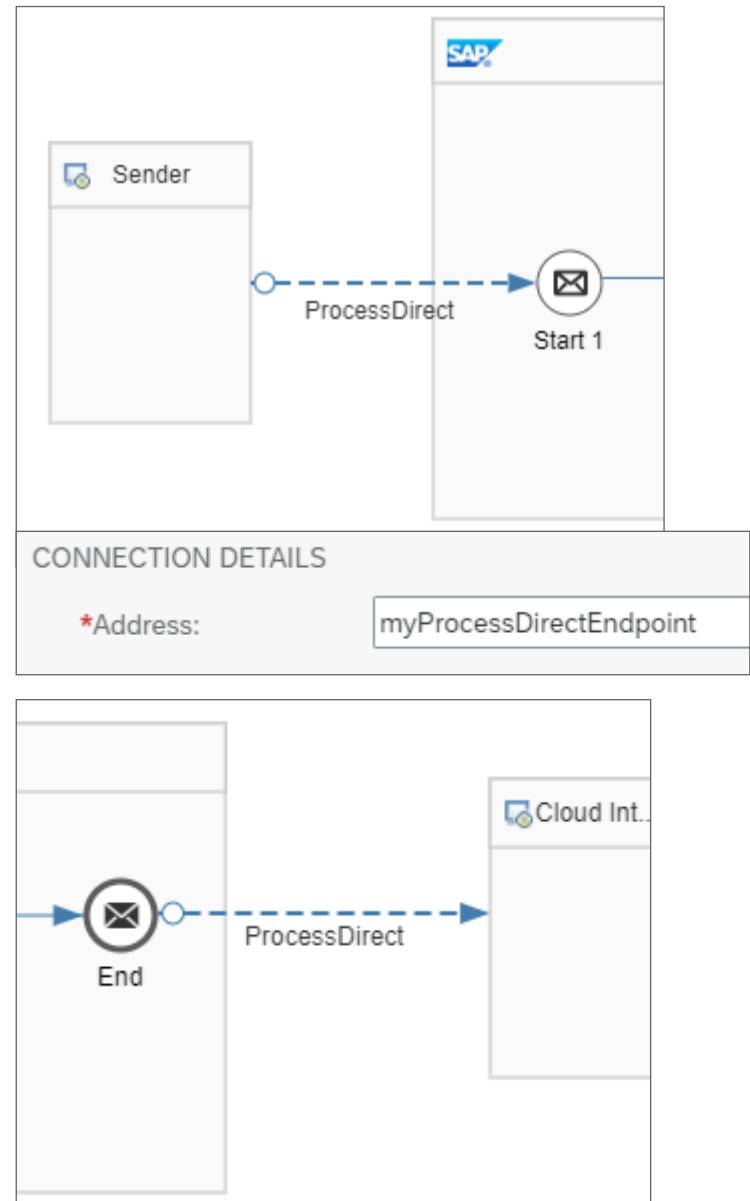
Using the Internet for flow-to-flow communication is bad

- Network latency
- Error-prone due to network failures
- Add load on network infrastructure devices
- Limited call duration

How?

ProcessDirect adapter for flow-to-flow communication

- No network infrastructure involved
- Synchronous connection
- Payload will be transferred
- Headers will be transferred but need to be allowed
- Properties will not be transferred
- Call duration not limited



Connecting cloud and on-premise applications with out-of-the-box adapters

Additional adapters

- Additional adapters are available via the Discover tab in the tenant or via SAP API Business Hub
- Have to be added manually
 - Download from SAP Software Center
 - Upload to the tenant workspace either via an integration package or via Eclipse [plugin](#)

The screenshot shows the SAP API Business Hub interface. On the left, there's a sidebar with icons for search, edit, and settings. The main area has a breadcrumb path "Discover (Integration) / Discover (327)". Below it, a dropdown menu shows "ALL" and "Adapter for SAP Integration Suite" (which is highlighted with a yellow box). A search bar and a refresh button are also present. The main content area displays a list of packages under "Adapter for SAP Integration Suite". One item is highlighted with a yellow box: "Amazon Web Services Adapter for SAP Integration Suite". Its details are shown in a modal window:

Discover (Integration) / Amazon Web Services Adapter for SAP Integration Suite / Amazon Web Services Adapter for SAP Integration Suite

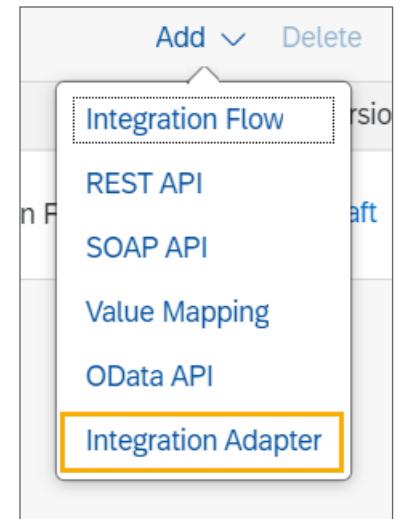
Overview Artifacts Documents (1) Tags Ratings

Download Location:

Navigate to:
[>> SUPPORT PACKAGES & PATCHES >> By Alphabetical Index \(A-Z\) >> C >> look for "SAP CP IS ADAPTER ADVANCE PACK" & "SAP CP IS ADAPTER BASE PACK"](https://launchpad.support.sap.com/#/softwarecenter)

Alternatively, you can directly go to:

- [SAP CP IS ADAPTER ADVANCE PACK](#)
- [SAP CP IS ADAPTER BASE PACK](#)



- Salesforce*
- Amazon WS*
- Microsoft Dynamics*
- SugarCRM*
- ServiceNow**
- Workday**
- Other partner adapters

* Free with all Cloud Integration editions

** Free with SAP Integration Suite Standard or Premium edition

Connecting cloud and on-premise applications with out-of-the-box adapters

Connecting to on-premise applications

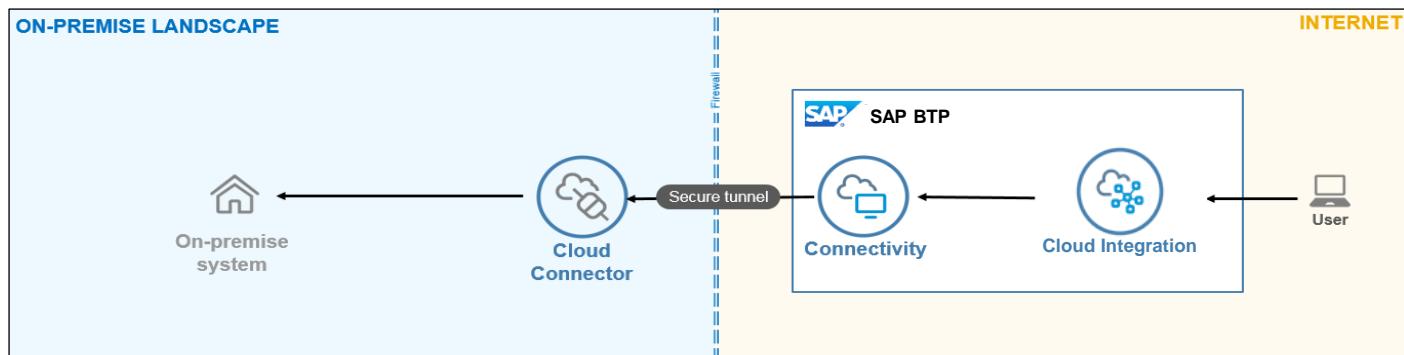
- HTTP
- SOAP
- IDOC
- XI
- Mail
- FTP
- SFTP
- OData
- AMQP
- RFC
- AS2
- JDBC

Why?

- Business systems run on customer-owned on-premise landscape
- Endpoints behind firewalls are not reachable from Cloud Integration by default
- Opening the firewall can impact security

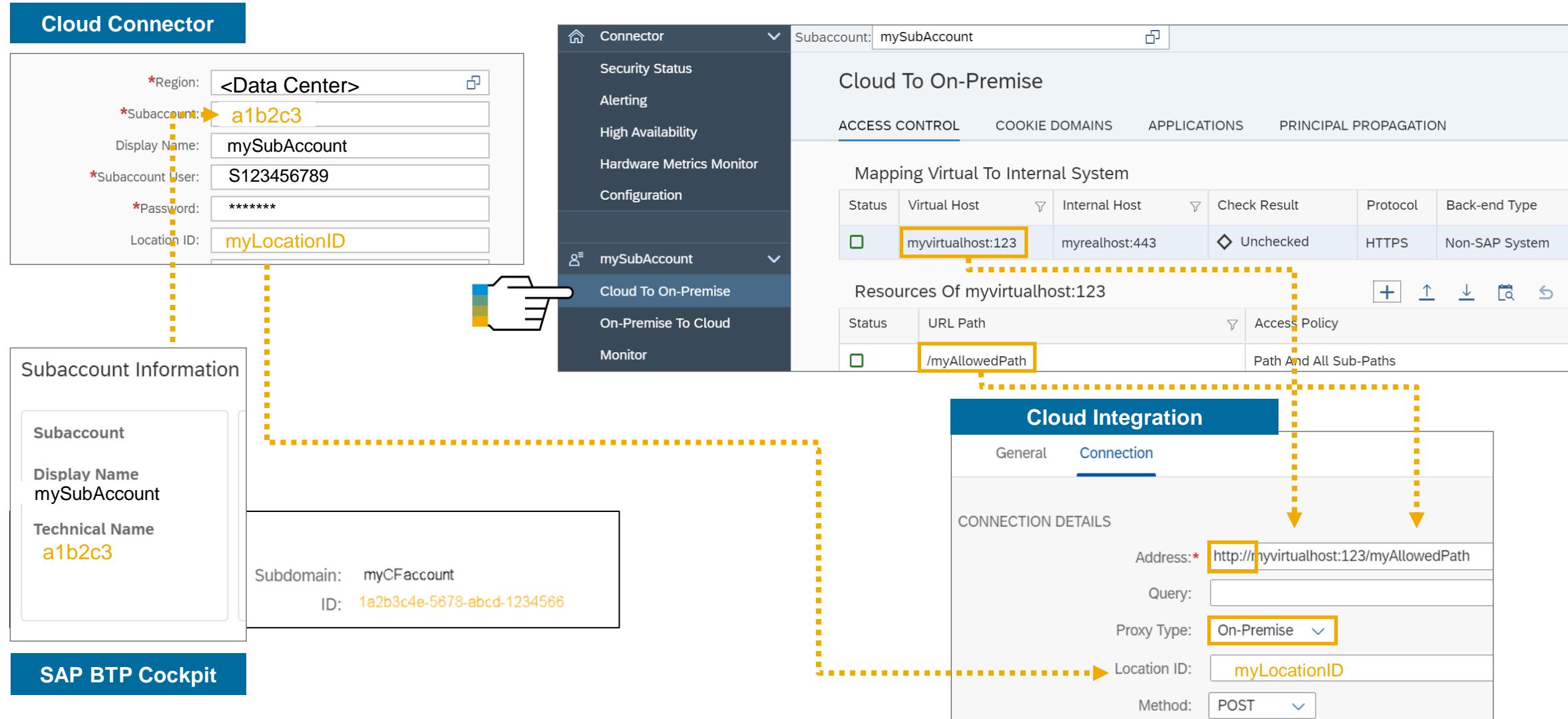
How?

- Cloud connector can establish a secure tunnel from within the on-premise network
- No need to open the firewall
- Powerful configuration to allow specific access
- Multiple cloud connectors possible for different network segments
 - Separation via *Location ID*



Connecting cloud and on-premise applications with out-of-the-box adapters

Configuring the cloud connector



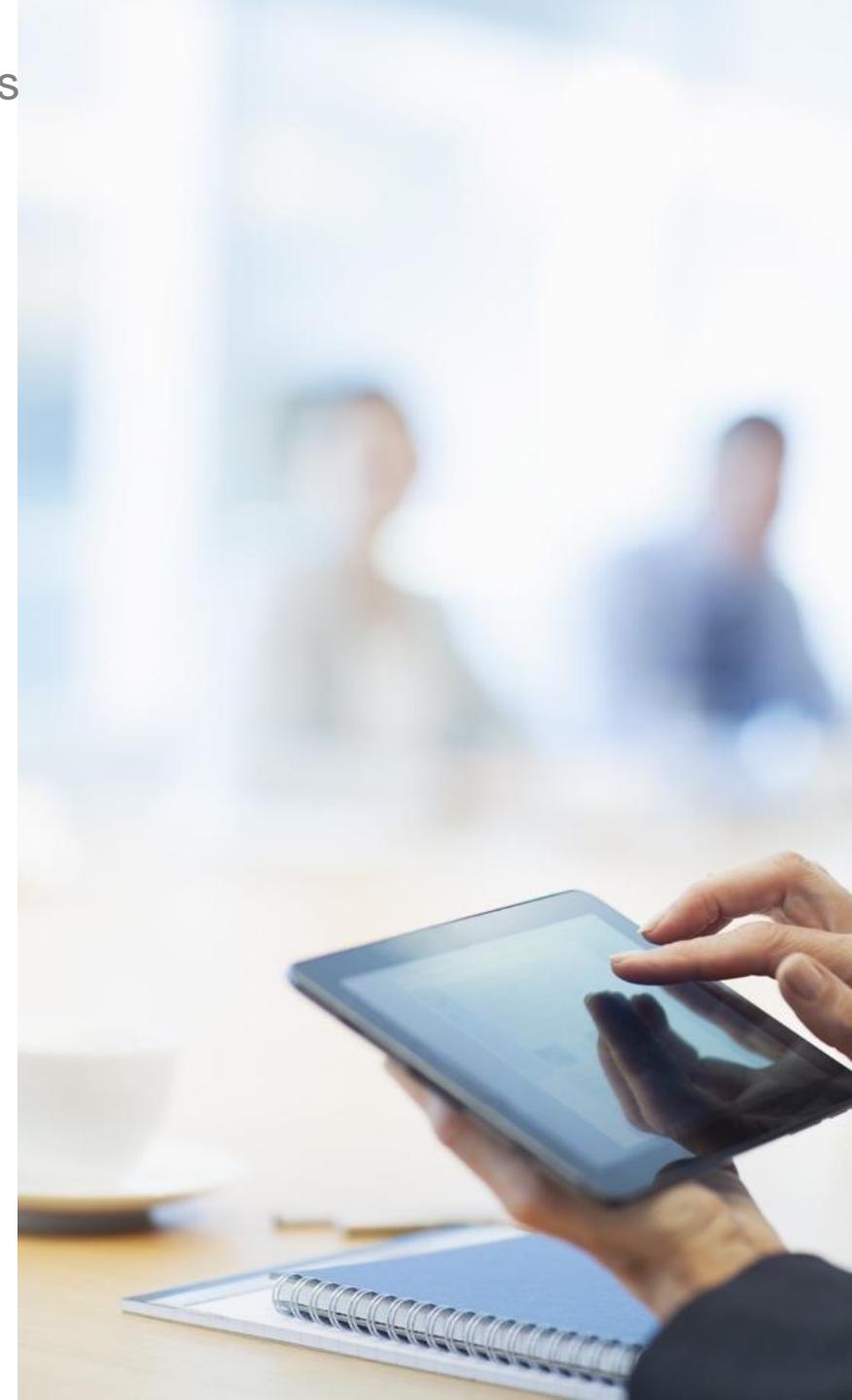
A photograph showing a close-up of a person's hands typing on a laptop keyboard. The scene is bathed in warm, golden sunlight streaming through a window, creating a strong lens flare effect. The laptop screen is visible in the background, and the overall atmosphere is bright and focused.

Demo

Connecting cloud and on-premise applications with out-of-the-box adapters

Summary

- Cloud Integration offers plenty of standard adapters
- Cloud connector enables you to securely connect your integration flows to your on-premise landscape
- Use ProcessDirect adapter for flow-to-flow communication



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Week 1: Introduction

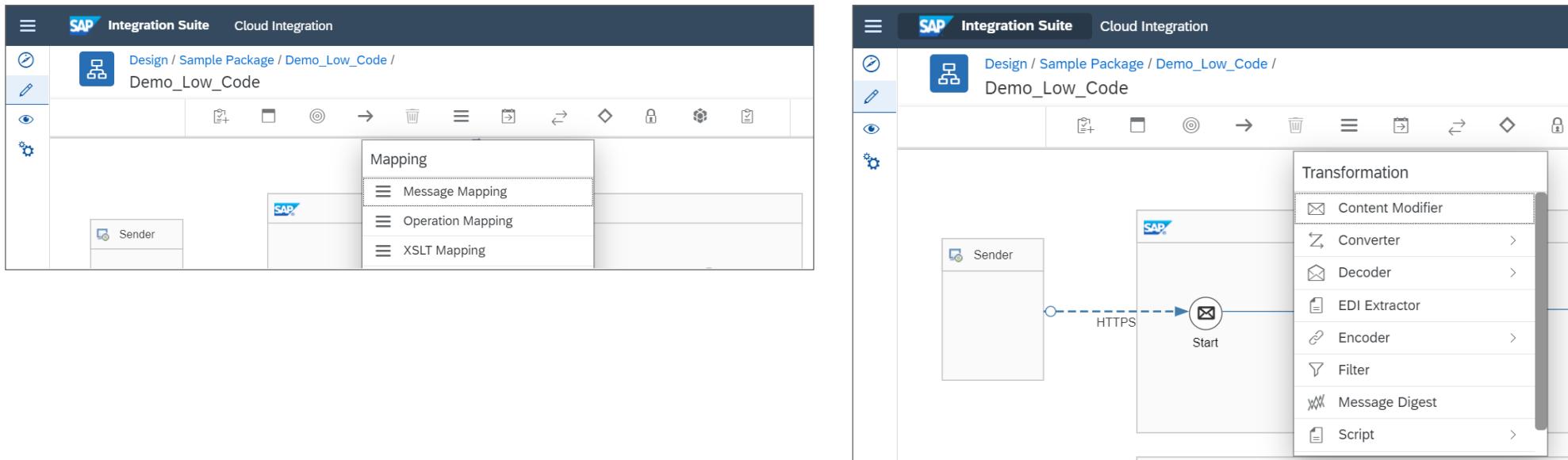
Unit 5: Transforming and Converting Messages

Transforming and converting messages

Message transformers

Message transformers enable you to convert messages from one format to another.
Below are the message transformers available in Cloud Integration.

- Mapping
- Encoder
- Decoder
- EDI Extractor
- Filter
- Content Modifier
- Converter
- Message Digest
- Script

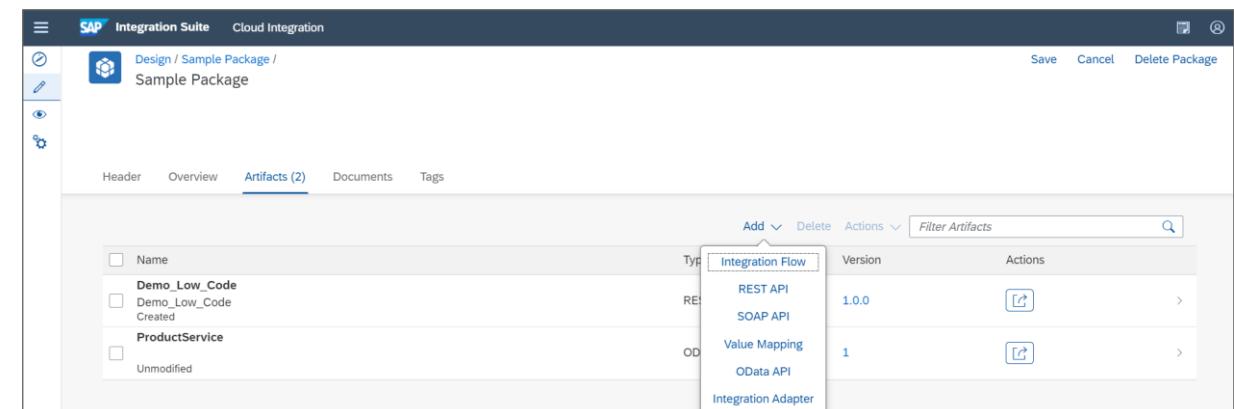
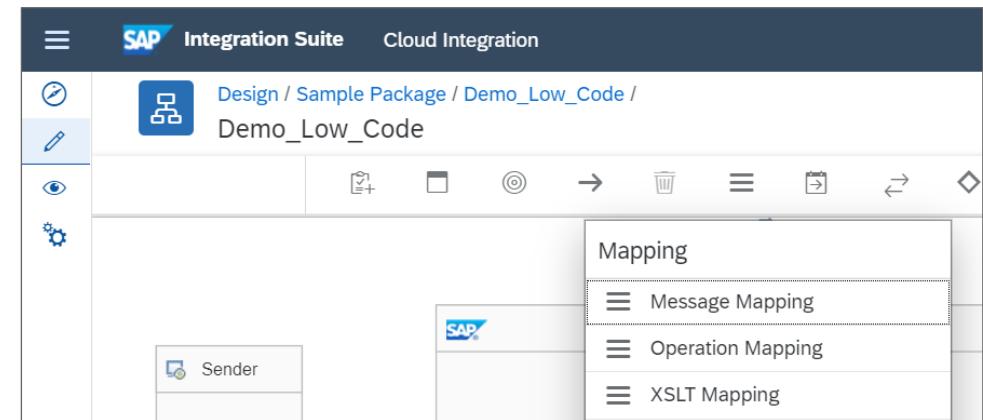


Transforming and converting messages

Working with mappings

The different mapping options available in Cloud Integration to translate one message format to another are:

1. Message Mapping
2. Operation Mapping
3. XSLT Mapping
4. Value Mapping



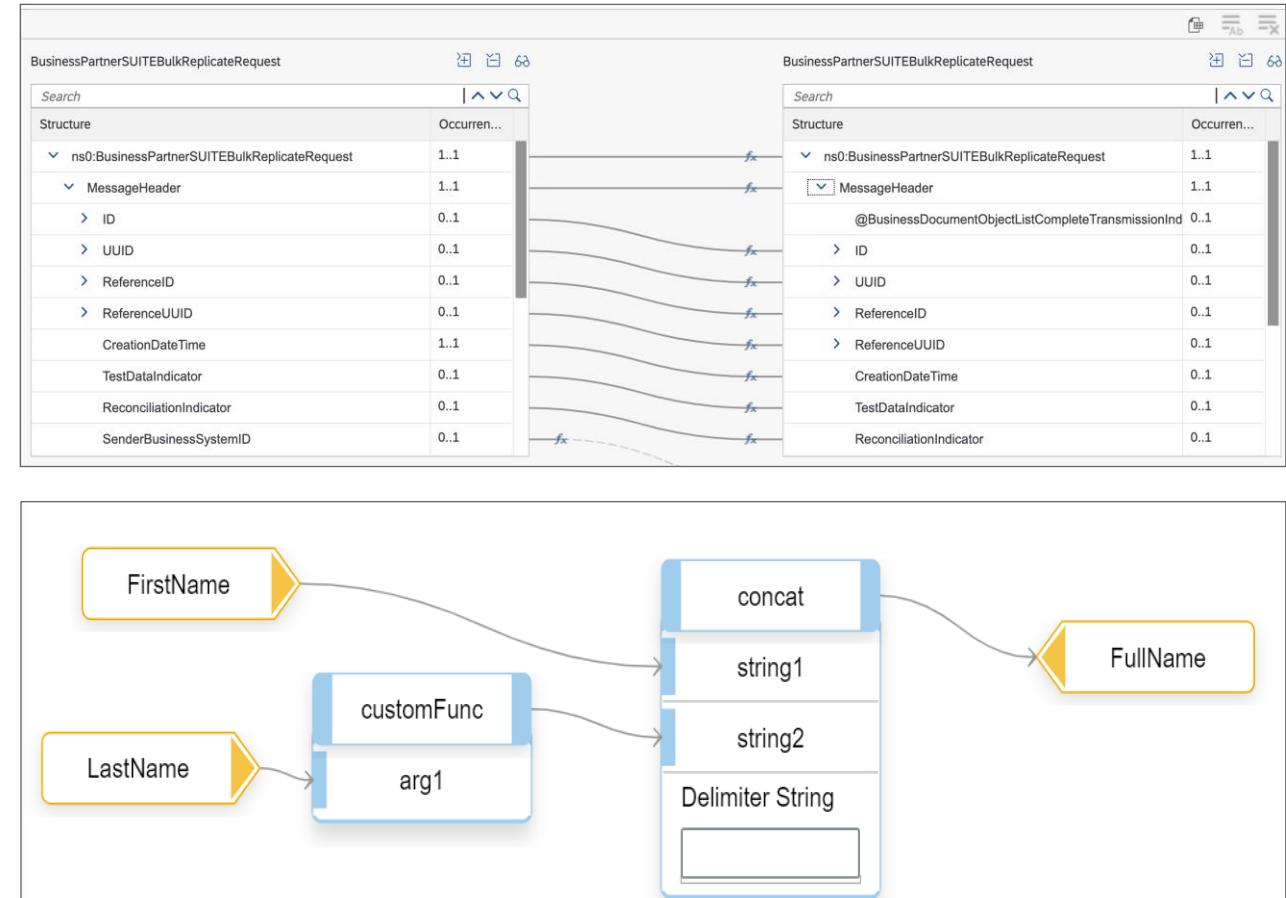
Transforming and converting messages

Message mapping

Message mapping defines the logic that maps input message structures with the required format of output message structures.

Advantages

1. Graphical mapping tool with search & copy features
2. Support for standard and custom mapping functions
3. Test mappings using Simulate and Display Queue



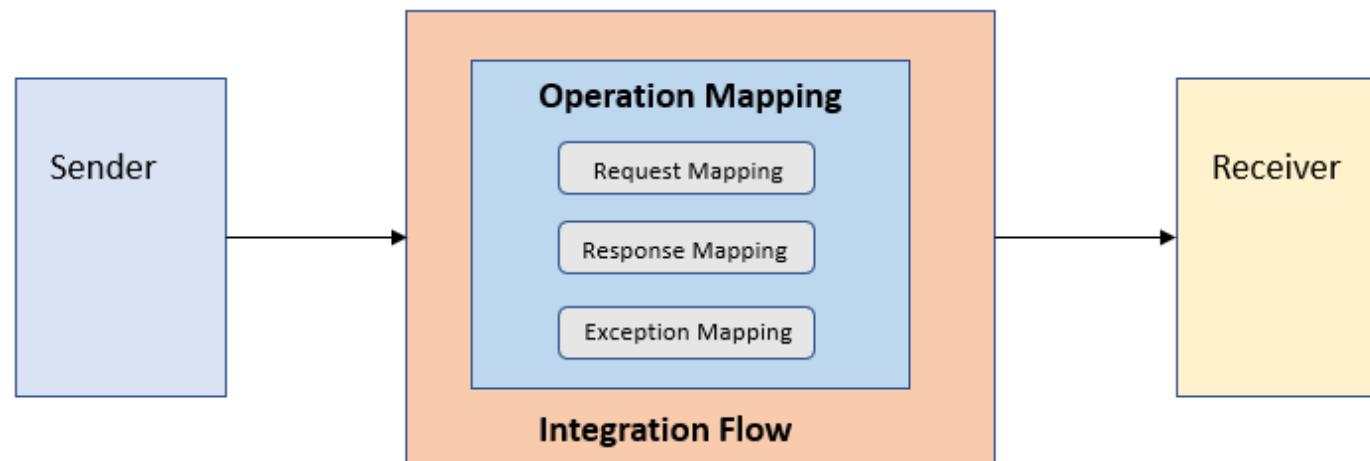
Note: The Mapping Editor works in a similar way to the Mapping Editor in Enterprise Services Repository (ES Repository).

Operation mapping

Operation mapping is used to relate an outbound service interface operation with an inbound service interface operation.

Advantages:

1. Encapsulates the used mapping program
2. Using multi-mapping in an operation mapping helps to perform several mapping programs for the transformation in a series



Note: Operation mapping can be imported from ES Repository only and cannot be created in Cloud Integration.

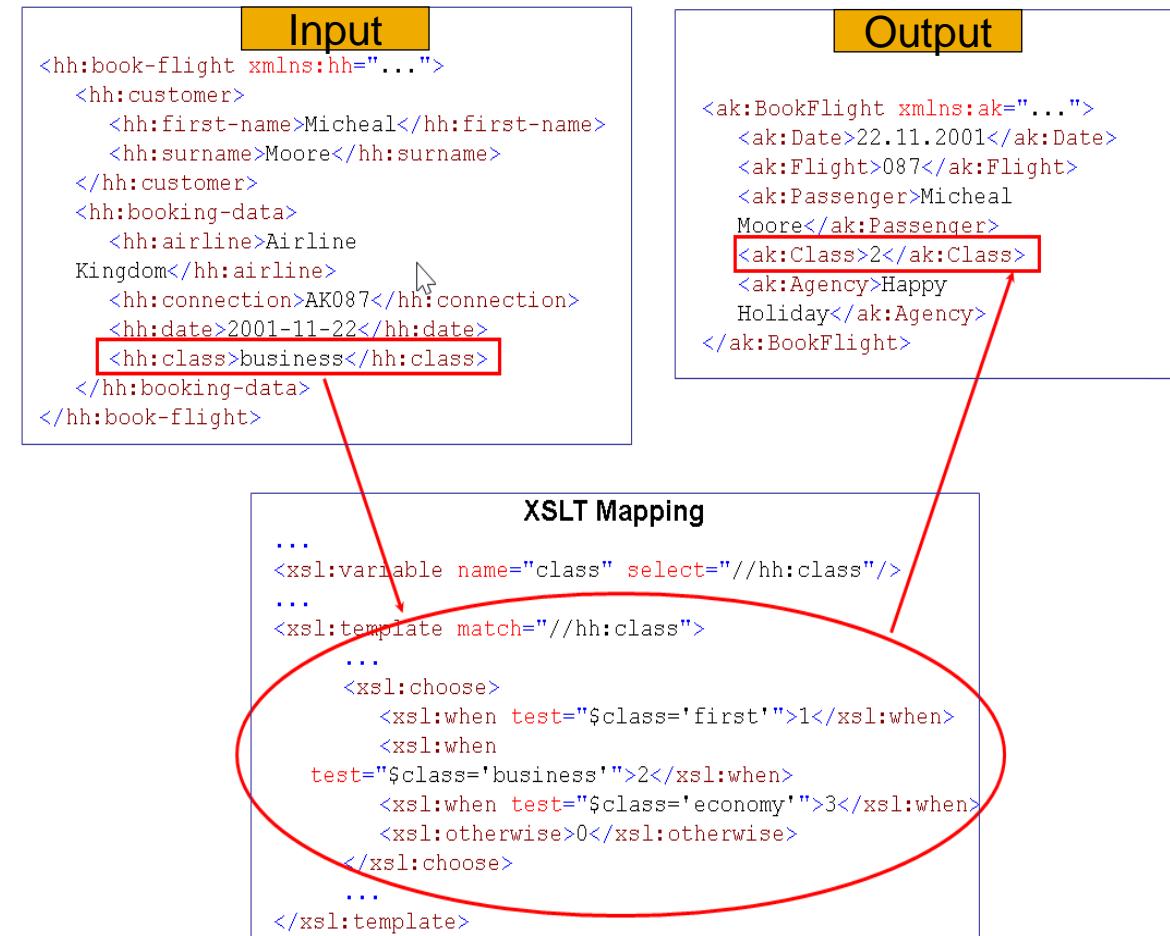
Transforming and converting messages

XSLT mapping

XSLT (Extensible Stylesheet Language Transformations) mapping transforms XML documents into other XML documents, HTML, or text. The transformation capability in the XSLT mapping step leverages the XSLT 3.0 specification.

Advantages

1. XSLT is most powerful for XML-to-XML mappings.
2. Eases complicated transformation, like mapping a large IDoc to a deeply nested XML structure.
3. Stylesheets can be stored in a version control system like Git.



Transforming and converting messages

Value mapping

- A value mapping artifact is used to represent multiple values for a single object in different contexts.
- Value mapping groups can be created or uploaded as a value mapping artifact in an integration package.

Value Mapping

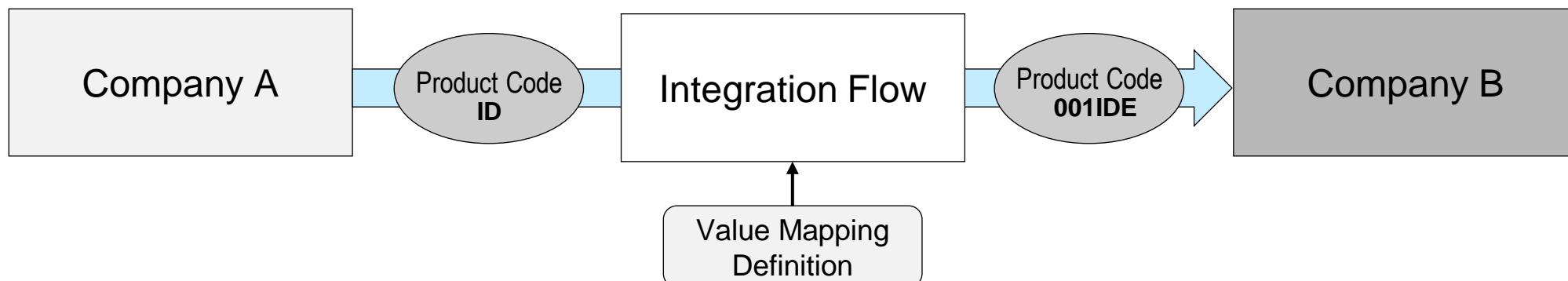
Reference Details

Search

Bi-Directional Mapping

Agency	Identifier	Agency	Identifier	State
Ariba	SystemID	ECC	Address	
Ariba	SystemID	ECC	Credentials	
Ariba	SystemID	ECC	CCLocationID	
Ariba	SystemID	ECC	ClientID	
Ariba	RealmID	ECC	Address	
Ariba	RealmID	ECC	ClientID	
Ariba	RealmID	ECC	CCLocationID	
Ariba	RealmID	ECC	Credentials	
HCI	Connection	CIG	Credentials	
HCI	Solution	CIGMasterData	Address	

Value Mappings Default Values



Scripting with JavaScript and Groovy

Cloud Integration offers a broad palette of flow steps to support you in realizing your integration scenarios. But there may still be use cases where you need additional functionality. For this, you can use the Script step. It allows you to run custom coding written in JavaScript or Groovy.

Capabilities

1. Access all message elements (message body, headers, properties, attachments)
2. Add custom headers to the message processing log (MPL)
3. Store own documents as MPL attachments
4. Access tenant artifacts like certificates or user credentials via an API
5. Access value mappings
6. Access partner directory artifacts

```
1 importClass(com.sap.gateway.ip.core.customdev.util.Message);
2 importClass(java.util.HashMap);
3
4 function processData(message) {
5
6     // get header 'myHeader1'
7     var map = message.getHeaders();
8     var myHeaderVar = map.get("myHeader1");
9
10    // get property 'myProp1'
11    map = message.getProperties();
12    var myPropVar = map.get("myProp1");
13
14    // overwrite the body with new input
15    message.setBody("My new Body has the value " + myHeaderVar + "_" + myPropVar);
16
17    //leave
18    return message;
19 }
```



Note: Script runtimes like Groovy are open source and can therefore change in future.

Transforming and converting messages

Content modifier

A content modifier can be used to modify the incoming message or payload by changing the content that is involved in message processing.

With this flow step, you can:

1. Create and delete Message Header
2. Create and delete Exchange Property
3. Set Message Body

Content Modifier

General Message Header Exchange Property Message Body

Properties: Add Delete

Action	Name	Type	Data Type	Value	Default
Create	myPropConst	Constant		myValue	
Create	myPropHeader	Header		myHeader1	
Select					
Create	myPropProp	Property		myPropConst	
Create	myPropPayload	Expression		\${in.body}	



Note: The order of message processing is as follows: Message Header, Exchange Property, Message Body.

Transforming and converting messages

Converter

An input message can be converted from one format to another so it can be used in the subsequent steps of the integration flow. You can use the converter steps to achieve this message transformation.

The following converters are available in Cloud Integration:

- CSV to XML Converter
- XML to CSV Converter
- XML to JSON Converter
- JSON to XML Converter
- XML to EDI Converter
- EDI to XML Converter

CSV To XML Converter

General Processing

*XML Schema:

*Path to Target Element in XSD:

Record Marker in CSV:

*Field Separator in CSV:

Exclude First Line Header

Configure CSV Headers to match:

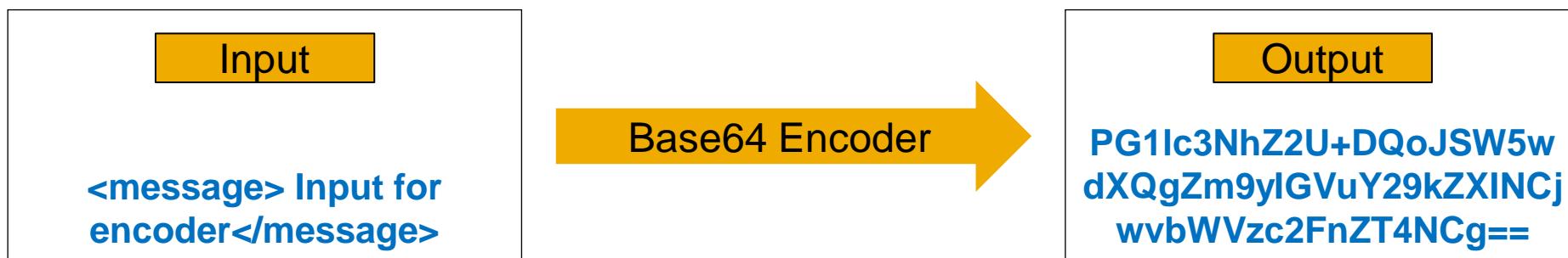
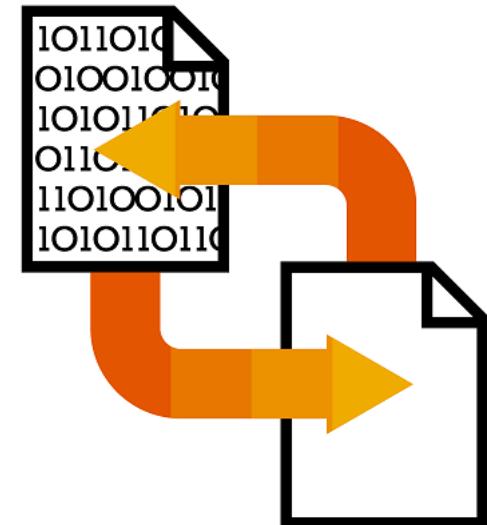
Transforming and converting messages

Encoder

This process step is used to encode messages by using an encoding scheme during transfer over the network.

From the palette, the following encoding schemes can be selected:

- Base64 Encoder
- GZIP Compression
- ZIP Compression
- MIME Multipart Encoder



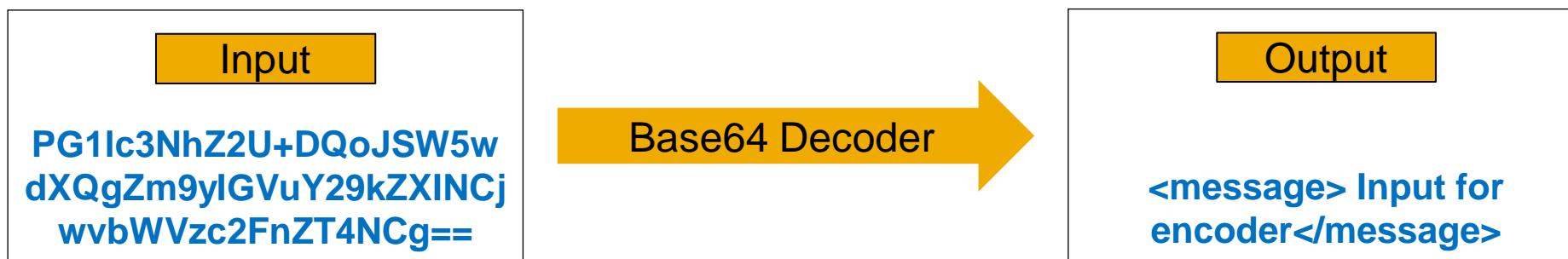
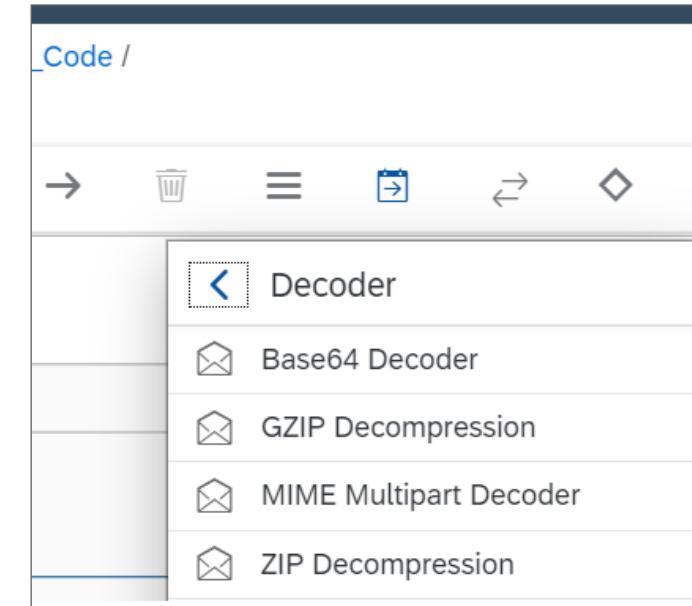
Transforming and converting messages

Decoder

This process step is used to decode the message received over the network to retrieve original data.

From the palette, the following decoding schemes can be selected:

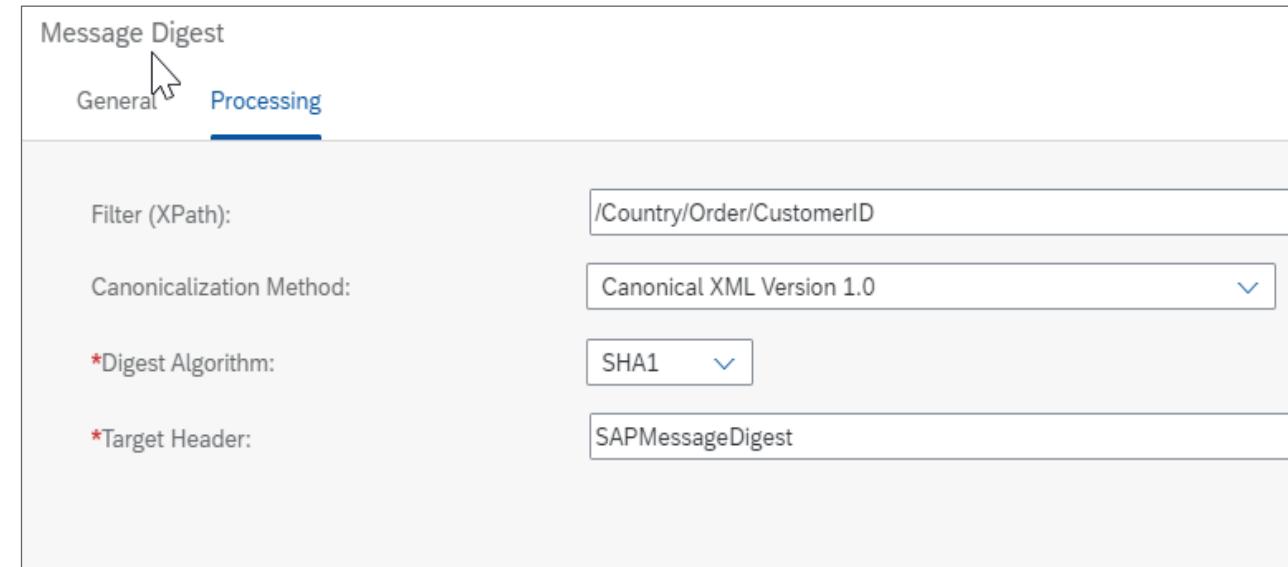
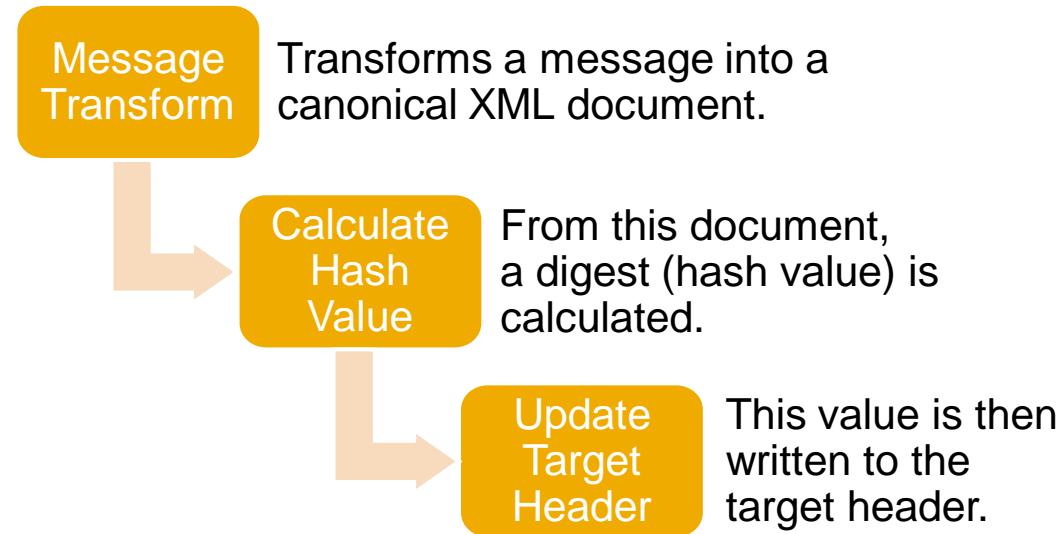
- Base64 Decoder
- GZIP Decompression
- ZIP Decompression
- MIME Multipart Decoder



Transforming and converting messages

Message digest

This integration flow step is used to calculate a digest (hash value) of the payload or parts of it and store the result in a message header. The following steps are involved:



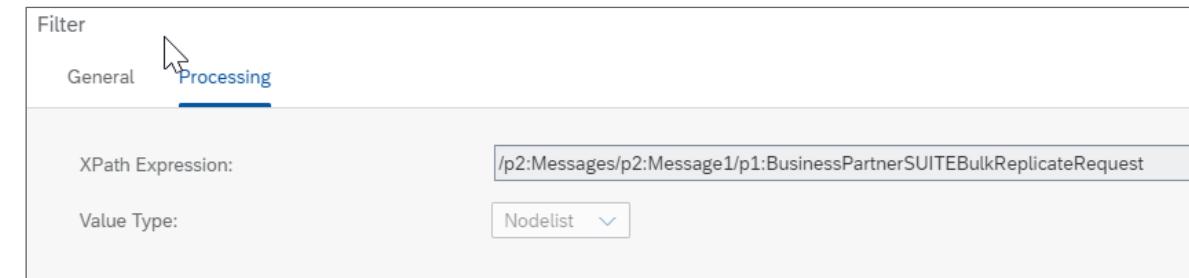
Transforming and converting messages

Filter

A **filter** step is used to extract information from an incoming message. It can be leveraged to use the capabilities of XPath 3.1 Enterprise Edition for extracting information from an incoming XML message.

With this flow step, you can:

1. Filter the incoming XML message using the filter function.
2. Sort the incoming XML message using the sort function.
3. Group or concatenate the incoming data.
4. Simplify the complex XPath expression.



Input

```
<Message>
  <orders>
    <order>
      <clientId>I0001</clientId>
      <count>100</count>
    </order>
    <order>
      <clientId>I0002</clientId>
      <count>10</count>
    </order>
  </orders>
</Message>
```

XPath- **/Message/orders/order**

Output

```
<order>
  <clientId>I0001</clientId>
  <count>100</count>
</order>
<order>
  <clientId>I0002</clientId>
  <count>10</count>
</order>
```

A photograph showing a close-up of a person's hands typing on a laptop keyboard. The scene is bathed in warm, golden sunlight streaming through a window, creating a strong lens flare effect. The laptop screen is visible in the background, and the overall atmosphere is bright and focused.

Demo

Transforming and converting messages

Summary

- **Use message transformers** to influence messages.
- Cloud Integration provides a **graphical mapping** tool and XSLT mapping to effectively map, interpret, and transform messages.
- Use the Script step to add scripts written in Groovy or JavaScript to access artifacts like credentials, etc.



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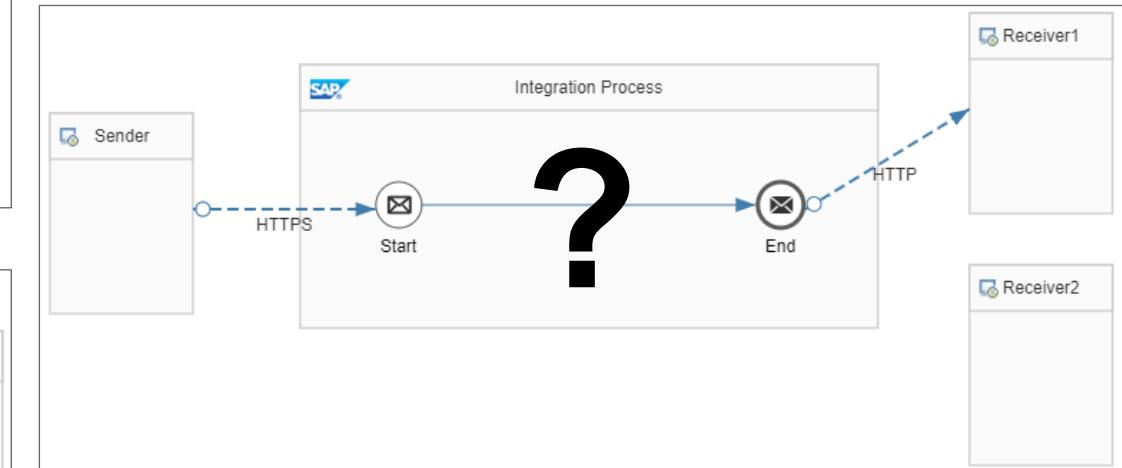
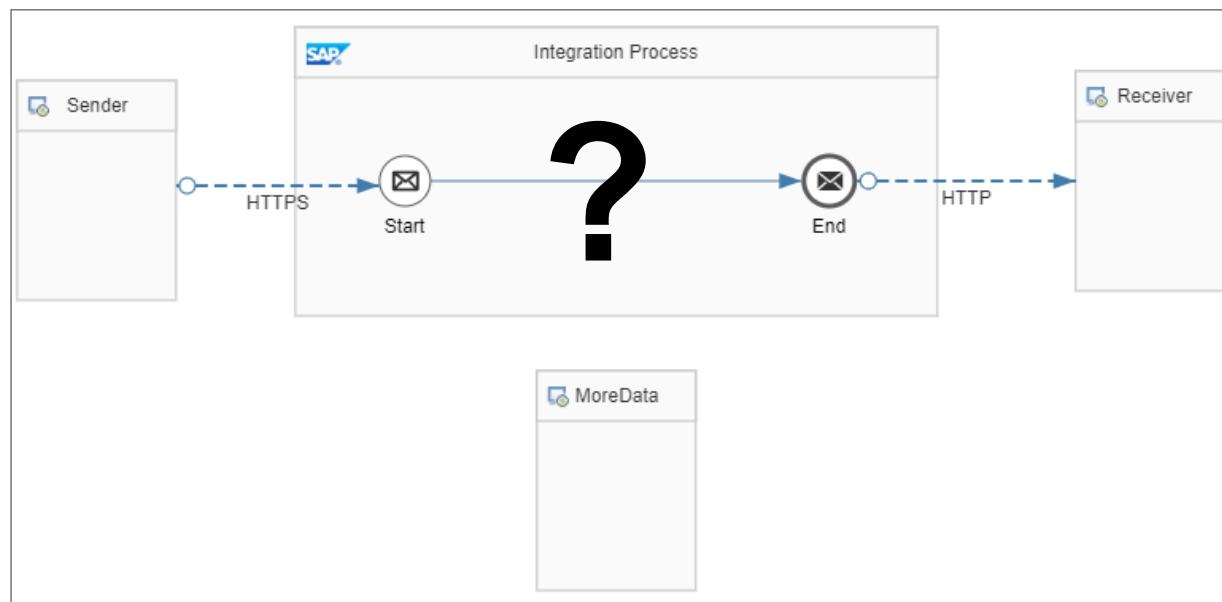
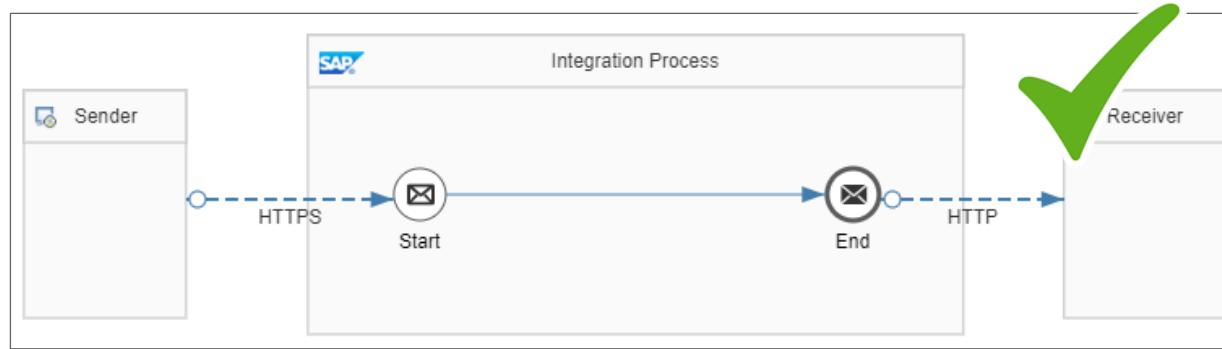


Week 1: Introduction

Unit 6: Routing and Controlling Messages

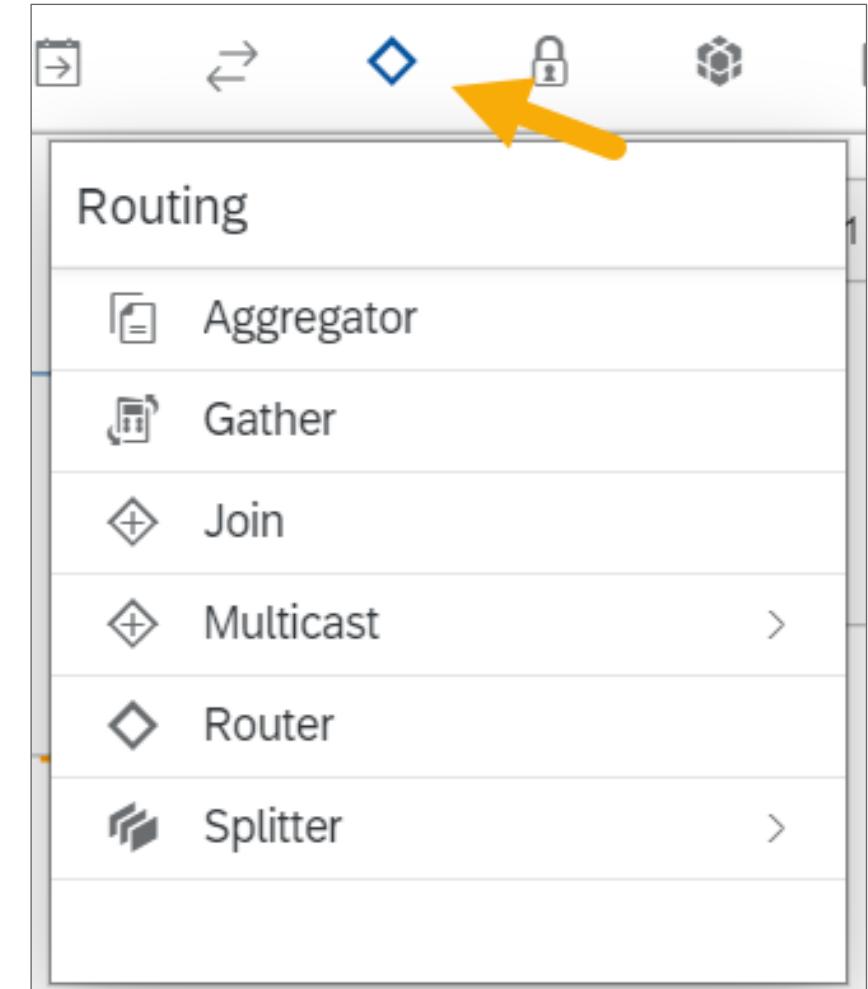
Routing and controlling messages

Problem statement



Routing requirements

- Integration scenarios are complex
- Different receivers involved
- Different business objects need different transformations
- Sender payload might not contain sufficient information
- Need for content enrichment, content-based routing, split, and aggregation

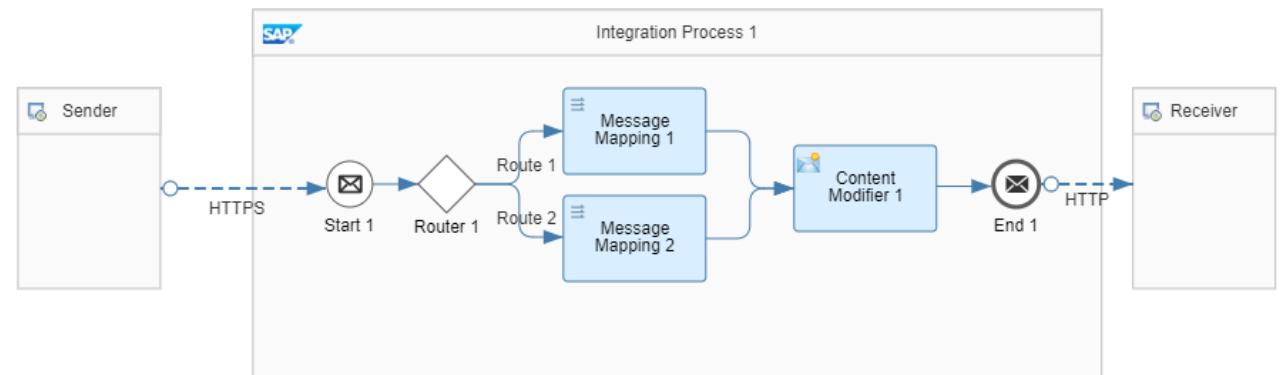
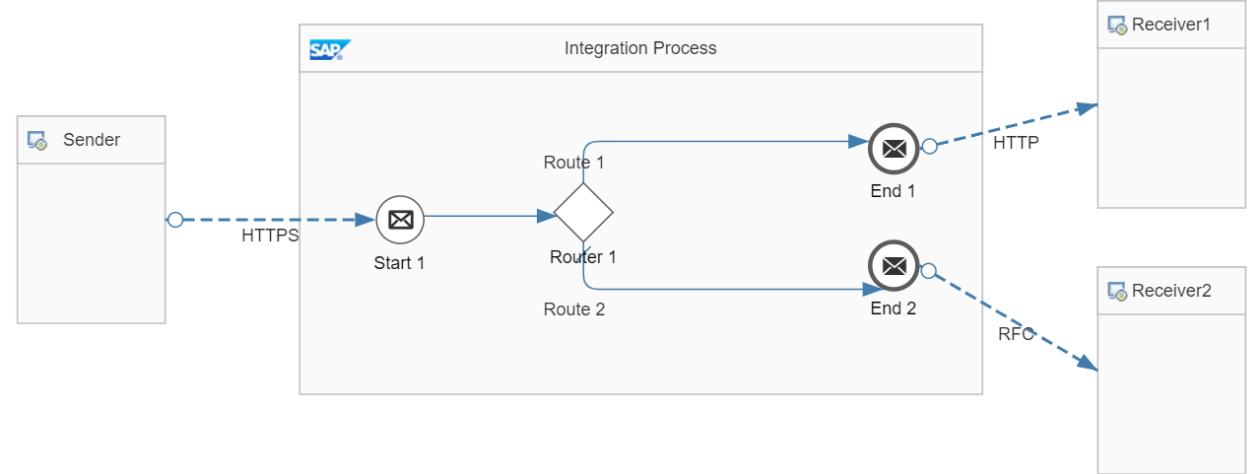


Routing and controlling messages

Router/content-based routing

Routing means choosing a processing path at runtime based on a certain condition

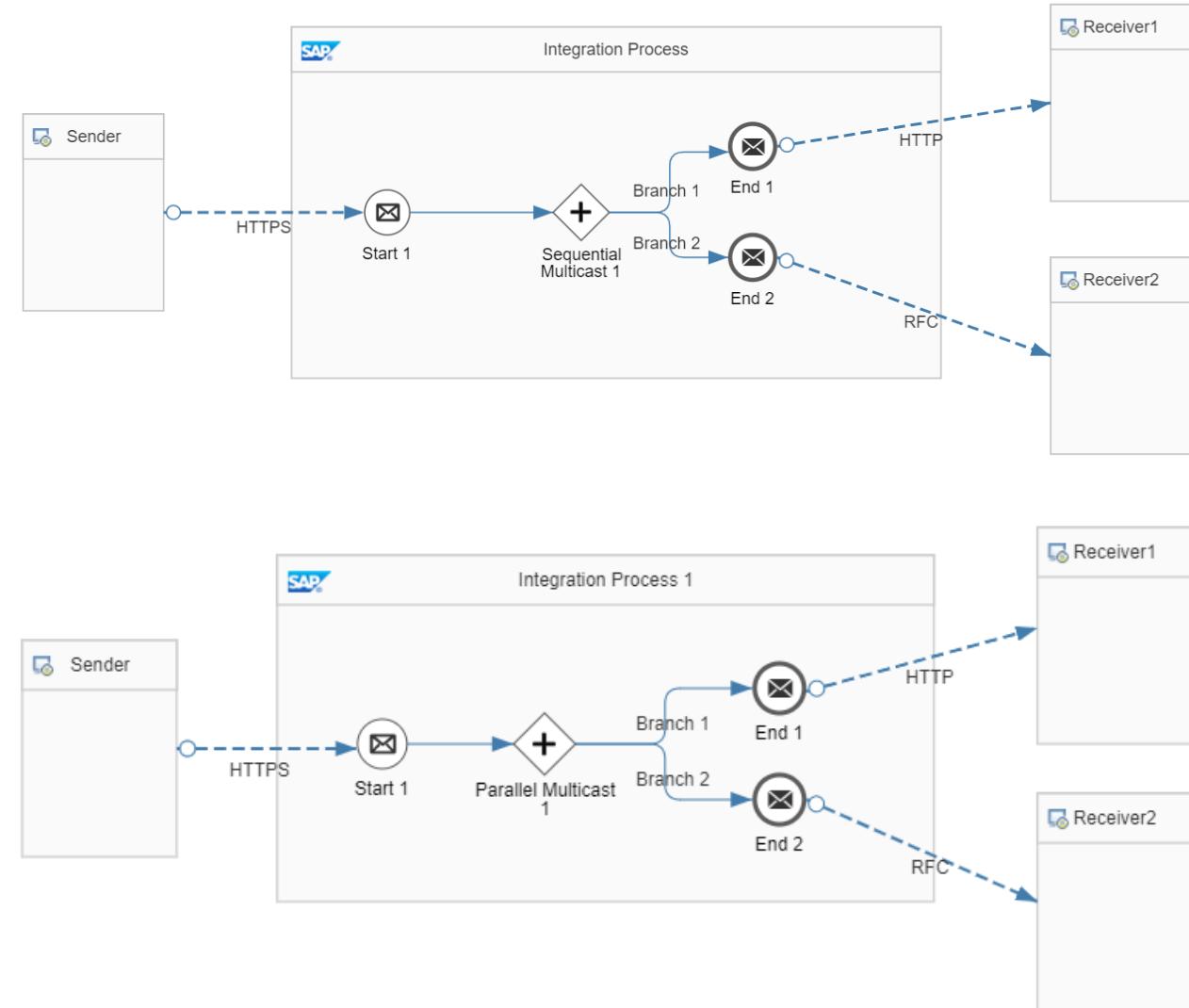
- Conditions can be XML-based or non-XML-based
- Order of the conditions in the router is important
- Only one router branch/route gets processed
- A default route is always required



Routing and controlling messages

Multicast/recipient list

- Send copies of the same message at runtime to multiple branches/routes
- All branches start with the same content (payload, headers, properties)
- No interference between child branches for immutable objects
- Sequential multicast
 - Ordered execution
 - Execution of a branch dependent on success of previous branch
- Parallel multicast
 - Parallel execution

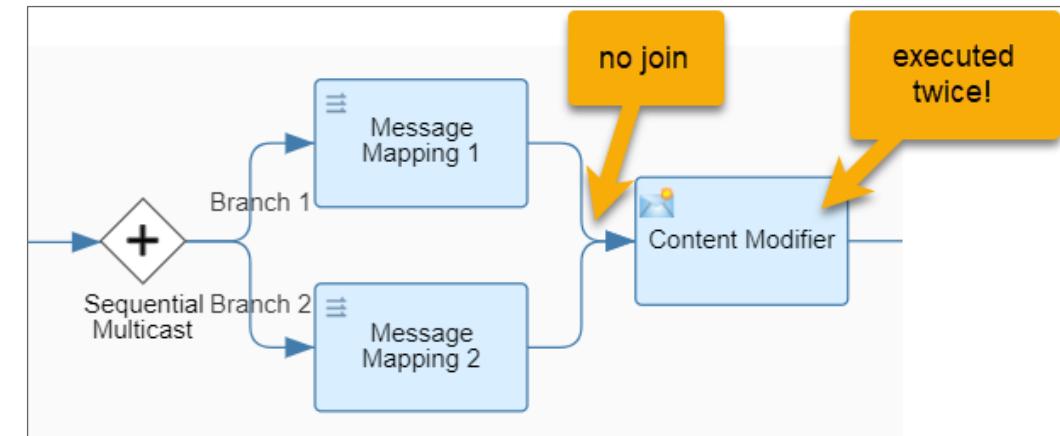
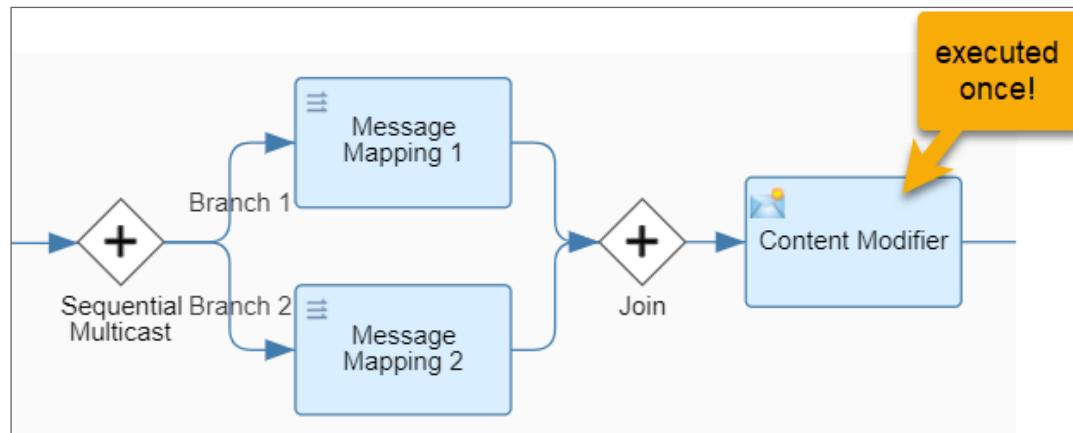


Routing and controlling messages

Join

Merges the *control* of all multicast branches back into one branch

- Without the Join step, all modeled flow steps will be executed by every branch
- Message content after the Join is defined by the last modeled branch



Note: Join cannot be used for router or splitter

Routing and controlling messages

Splitter

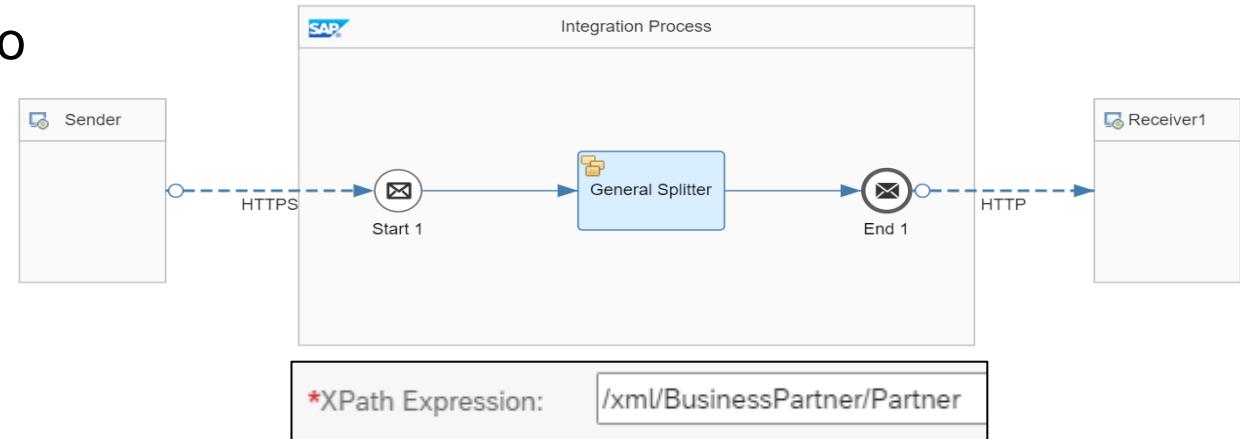
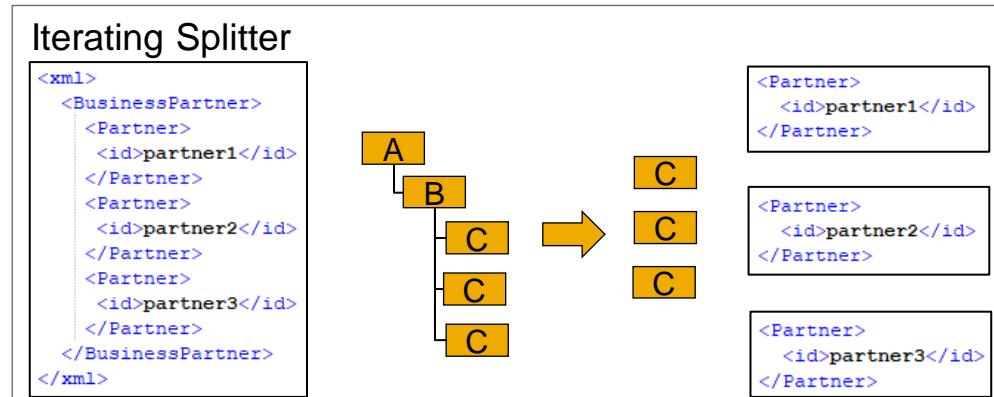
Splitter helps to break composite messages into individual messages based on certain criteria.

General splitter

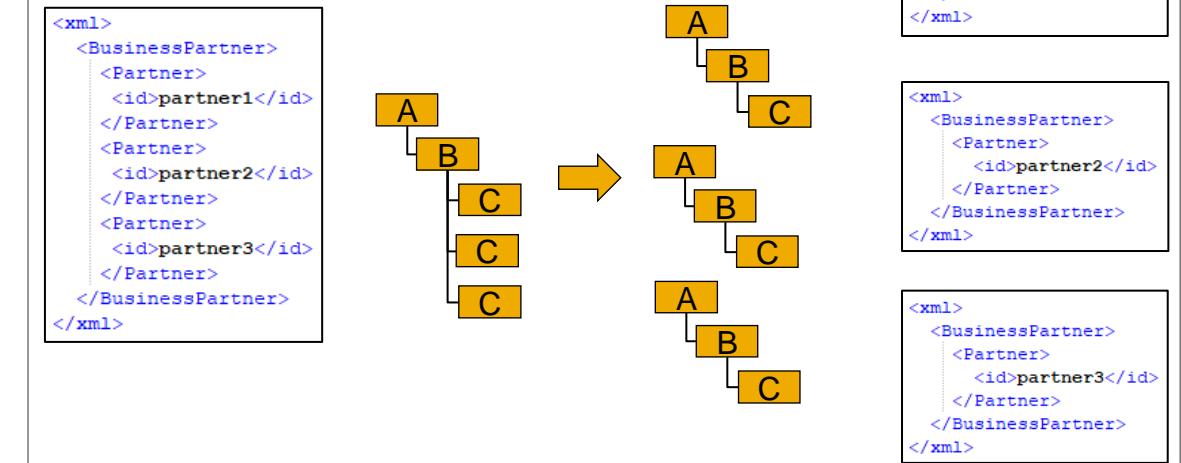
- Can split XML and non-XML files
- Can use grouping
- Can use parallel processing
- Keeps enveloping elements

Iterating splitter

- Similar to general splitter
- Removes enveloping elements



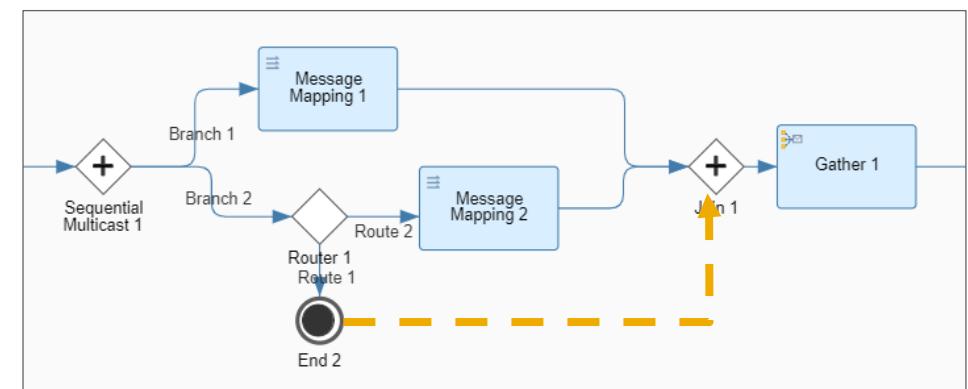
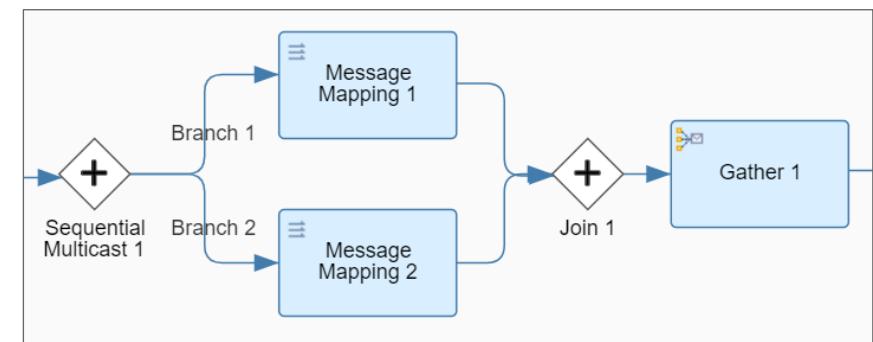
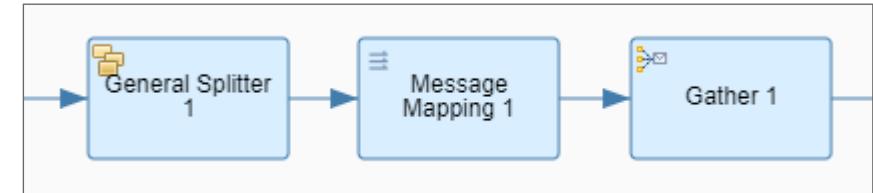
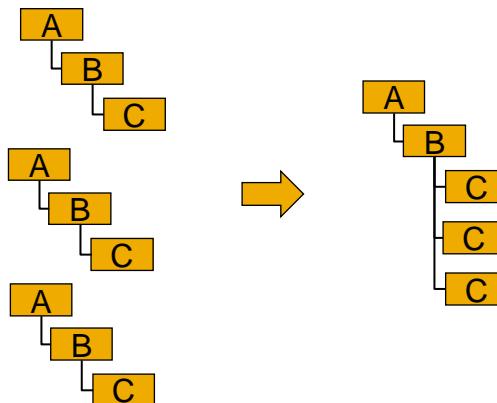
General Splitter



Routing and controlling messages

Gather

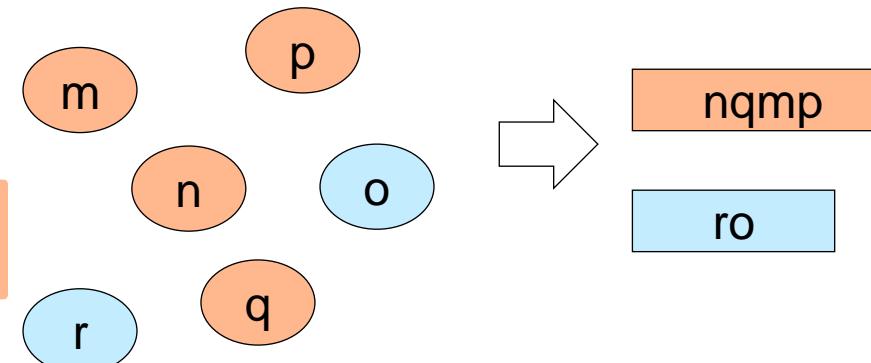
- Merges the *content* of the individual multicast/splitter messages
 - Join required in addition for multicast
- Different payload merge strategies possible
 - Concatenate: append payload
 - Combine: append XML payload into a multi-message payload
 - Combine at XPath: merge XML into a custom structure
- Identical headers and properties are overridden
- All branches are merged, including the abandoned ones



Routing and controlling messages

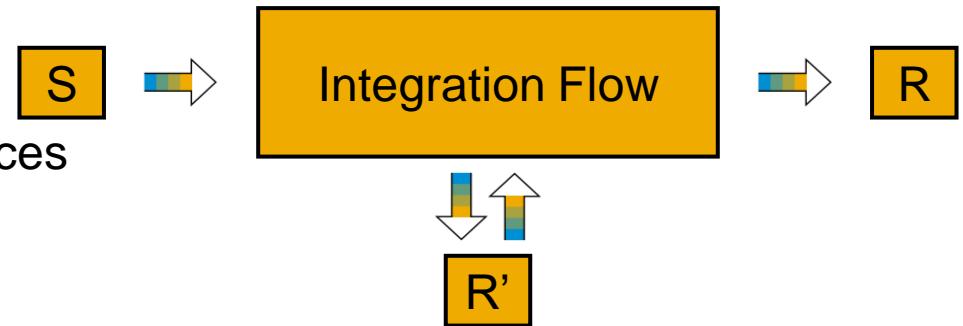
Aggregator

- Merges multiple XML messages into a single message
- Data-store-based
- Message correlation based on an identifier in the payload
- Content-based sequencing possible
- Pre- and post-aggregation logic is *modeled* in the same integration process
- Pre- and post-aggregation logic is *logged* as multiple message processing logs



External calls

- Enhance an integration flow with information from external sources
- Send intermediate messages to external targets
- Continue flow processing after the external call



Send

Send a message to a receiver and continue processing; no response

Request-Reply

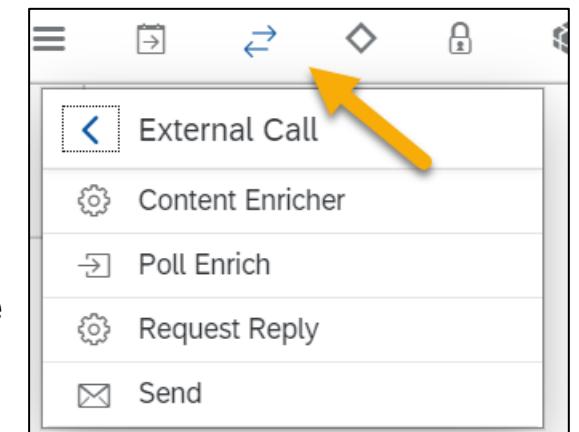
Send a message to a receiver and continue processing the response

Content Enricher

Retrieve information from external sources and merge it into the current message

Poll Enrich

Retrieve an (S)FTP file and merge it into the current message



Note: When doing intermediate calls, all headers will be transferred to the external receivers and might be changed on return. Properties will not be transferred and therefore should always be preferred for controlling the flow logic.

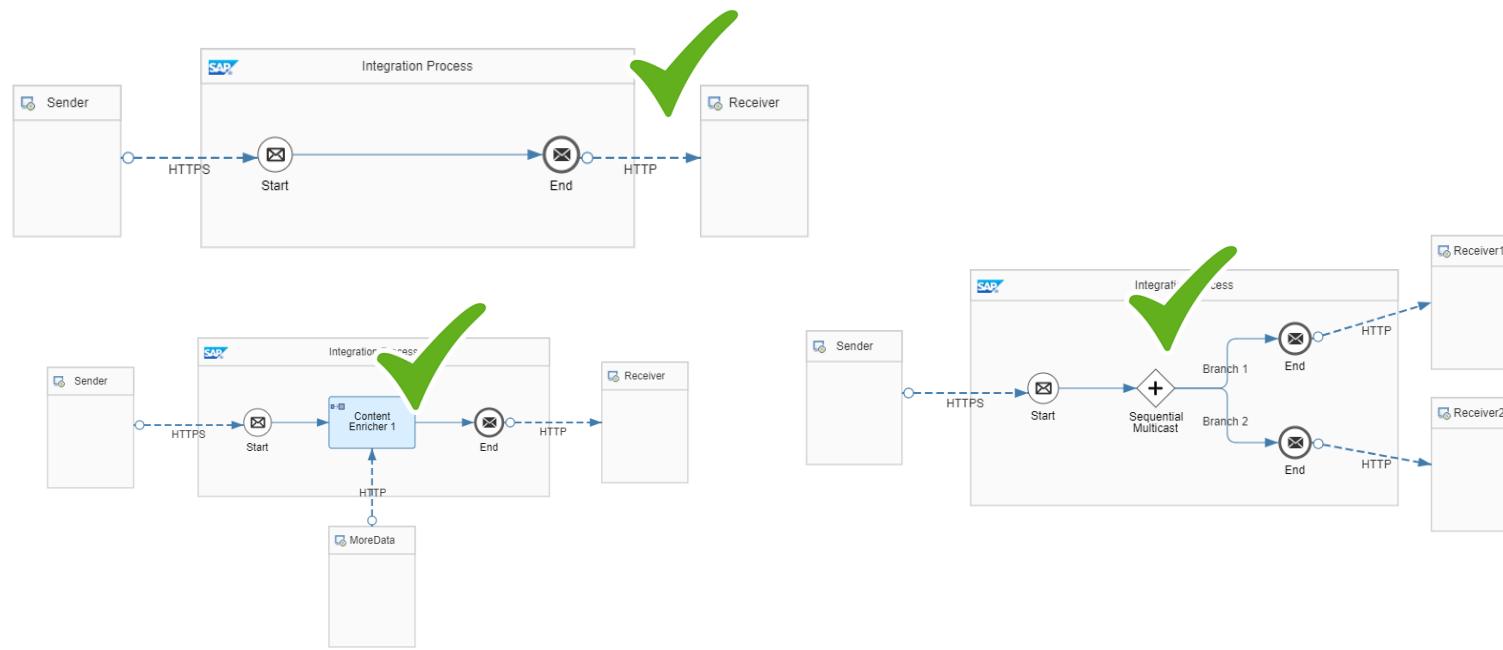
A photograph showing a close-up of a person's hands typing on a laptop keyboard. The scene is bathed in warm, golden sunlight streaming through a window, creating a strong lens flare effect. The laptop screen is visible in the background, and the overall atmosphere is bright and focused.

Demo

Routing and controlling messages

Summary

- Different routing steps give you the possibility to control your message processing.
- With intermediate calls, you can enhance your process with additional data.
- Flow logic should be controlled by properties, not by headers.



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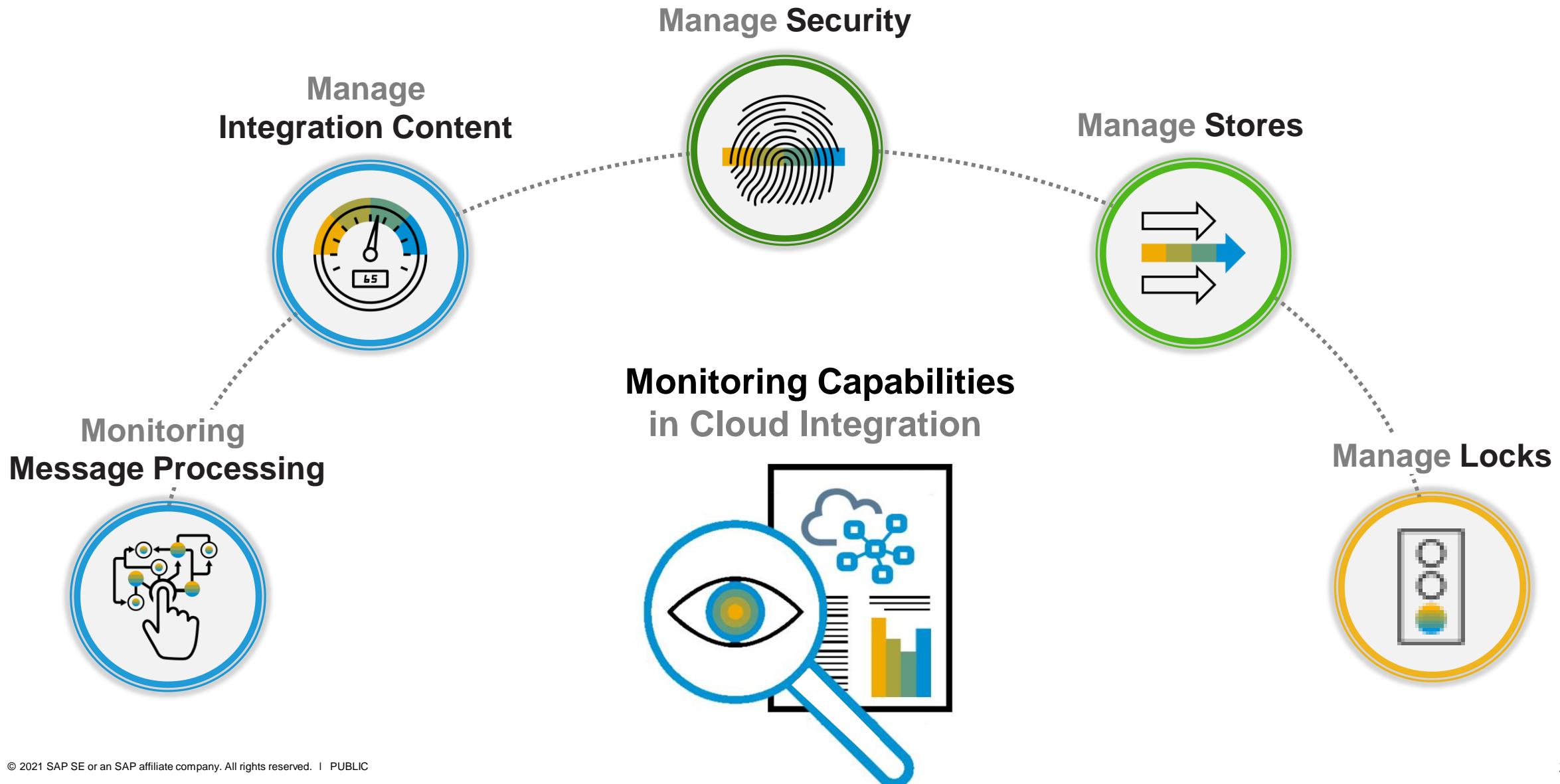


Week 1: Introduction

Unit 7: Monitoring and Running Integration Flows

Monitoring and running integration flows

Monitoring capabilities of Cloud Integration



Monitoring message processing

Integration
Developer



Shows status of processed messages within a specified time window

- Enhanced filtering options to find relevant message
- Message attributes and properties
- Log information in textual form, the log level, and the runtime node
- Message processing log (MPL) attachments if added via scripts
- Navigation to the deployed* and to the latest version of the integration flow model
- Good starting point for investigating an error that occurred during integration flow execution
 - Error details in case of unsuccessful processing
 - Navigation to the visual presentation of the MPL

* In read-only mode

Monitoring and running integration flows

Enhanced filtering options of processed messages



Standard filter options:

- Time, Status, Artifact
- IDs, incl. business-related **Application Message ID** set via a Content Modifier step

Additional filter criteria

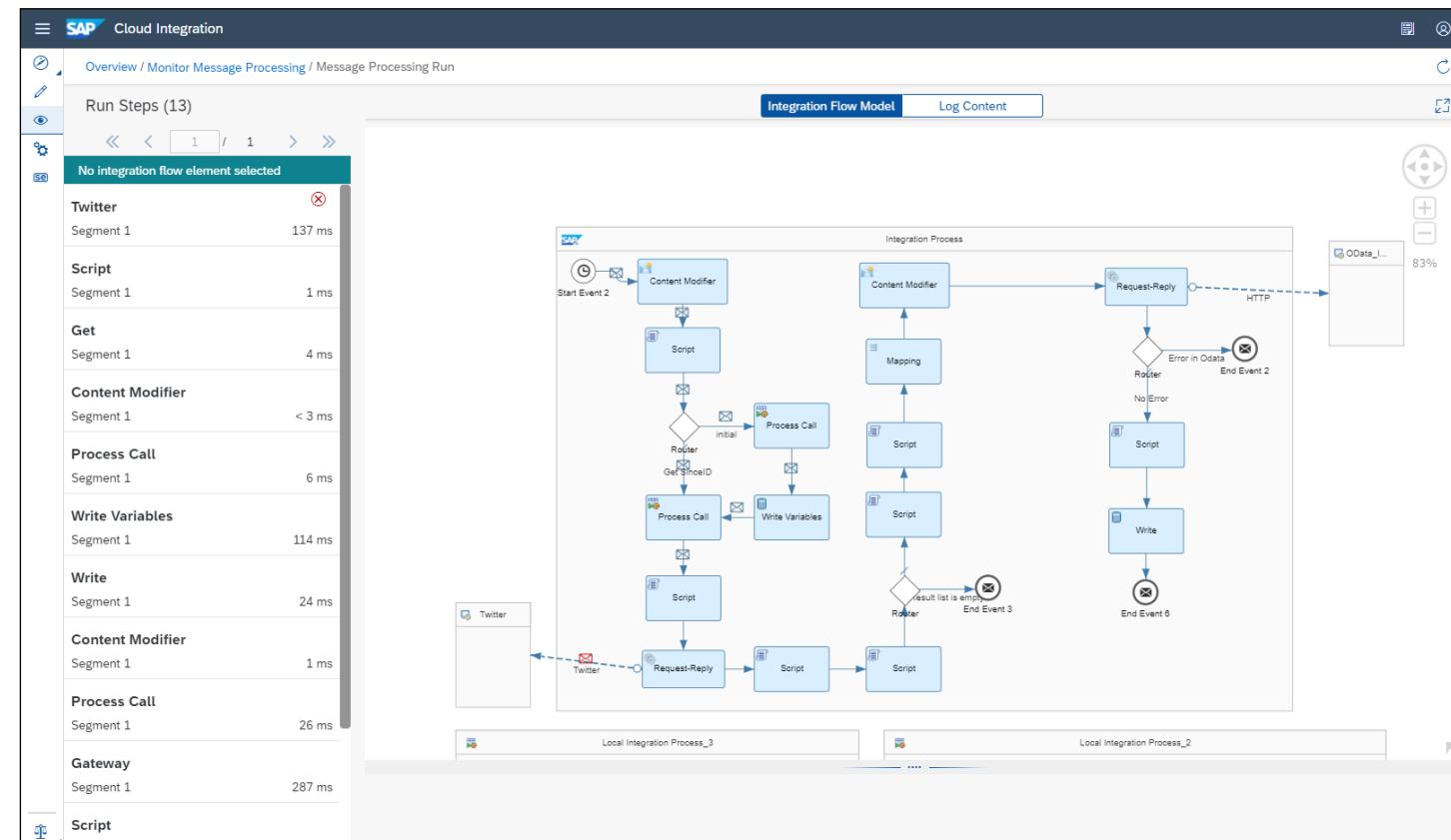
- Fields to be set via a Content Modifier step:
 - Sender, Receiver, Custom Status, etc.
 - Value help available
- Field to be set via Script step:
 - **Custom Header** properties (name value pair)
 - Store **business or payload-related information** in the message processing log

The screenshot shows the SAP Integration Suite Cloud Integration interface. At the top, there are filter options: Time (Past Hour), Status (All), Artifact (All Integration Flows). A red box highlights the 'Sender' and 'Receiver' fields, which are empty. Below the filters, the 'Messages' section shows two entries: 'Incoming Orders From S4HANA To SAP Commerce Cloud' (Completed, Mar 30, 2021, 11:56:18) and 'Replicate Cart and Checkout Order Notifications From S4HANA To SAP Commerce Cloud' (Completed, Mar 30, 2021, 11:56:13). The right side of the screen displays details for the first message, including 'Incoming Orders From S4HANA To SAP Commerce Cloud' last updated at Mar 30, 2021, 11:56:18. It shows a success message: 'Message processing completed successfully.' with a processing time of 7 ms. The 'Properties' tab is selected, showing a custom header 'IDOCNUM=0000123461'. Other tabs include 'Status', 'Logs', and 'Artifact Details'. At the bottom, it shows 'Message ID: AGBI9cKIPinJKUIK6R6YIRG6lytu' and 'Correlation ID: AGBI9cKR7qwdBjNVOTlh92xNFHO'. There is also a 'Logs' section with an 'Open Text View' link.

Insights into the content of the processed message



- **Message Processing Log** correlates system log data with integration flow model
- Shows **message traversal path**
- **Highlights** flow step where **error** was thrown
- Provides read-only access to **integration flow configuration**
- Additional **tracing message content** of steps and adapters
 - only with *Trace* log level, active for certain time**
 - Message content before a step
 - Payload data can be downloaded*
 - Recommended to use in development or test environment



* As business expert persona

** Default: 10 mins active, content retention time 1 hour

Management of deployed integration content

Integration
Developer



Manage Integration Content



- Deployment info including **status** of deployed artifacts
- **Actions** on an artifact as restart, un-deploy, or download
- **Endpoint URLs exposed**
- Artifact details (depending on artifact type)
 - Access the **monitor message processing**
 - View **deployed artifact**
 - Navigation to **artifact editor**
 - Navigation to the value mapping design
- Configuration of **log level** as, e.g. *Trace*
 - Information level recorded during message processing
 - Number of retained messages

Monitoring and running integration flows

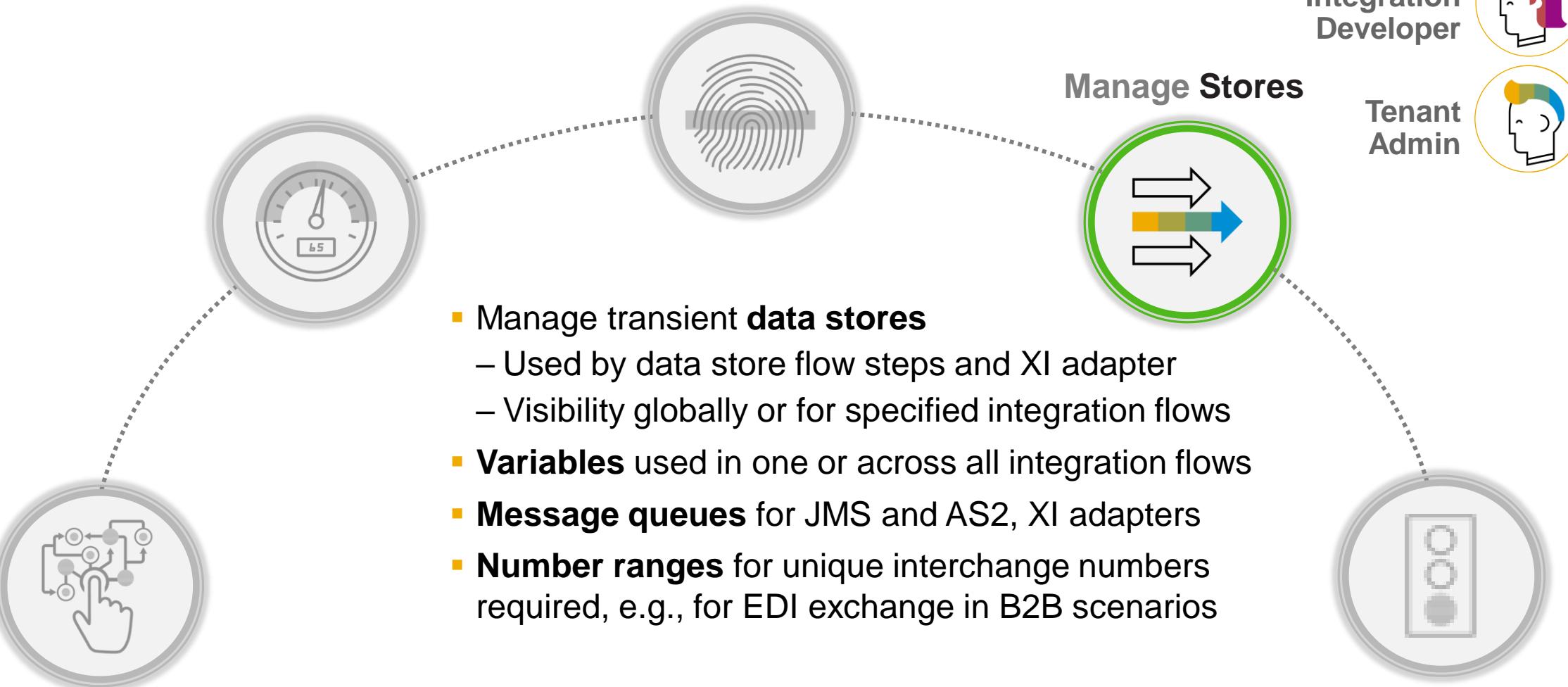
Secure system management in potentially hostile environments



- Maintain tenant's **security-related materials** as credentials, PGP keyrings, SSH known hosts
- Manage the **keystore** material as certificates/key pairs owned by customers or SAP
 - Create private keys
 - Upload external certificates and handle certificate signing requests
 - Restore certificates and key pairs
 - Back up customer's entries
- **Access policies** to protect subsets of artifacts and business data*
- Manage **JDBC** access
- Manage user roles*
- **Test** outbound connectivity (TLS, SSH, FTP, SMTP, IMAP, POP3, Cloud Connector, Kafka)

* In multi-cloud env

Data stores to temporarily persist data during message processing



Business
Expert

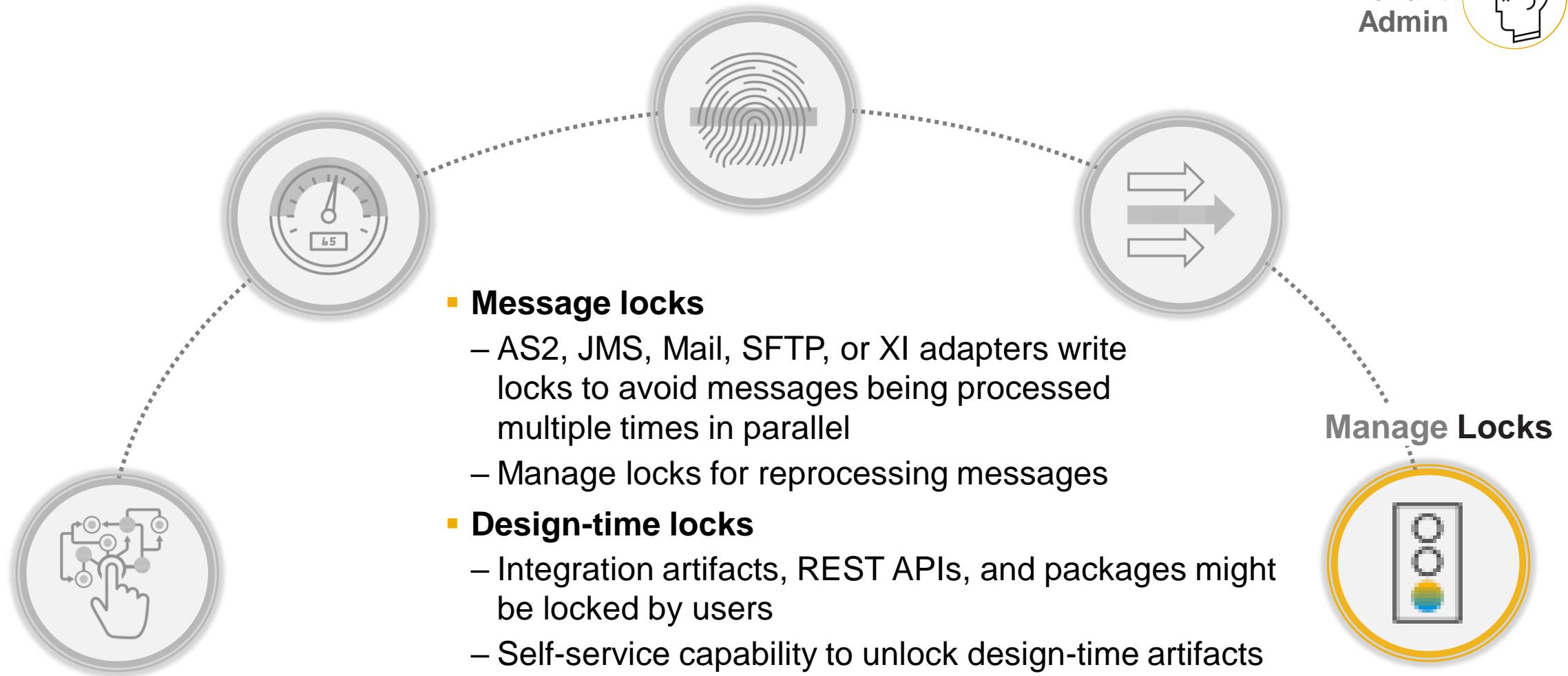
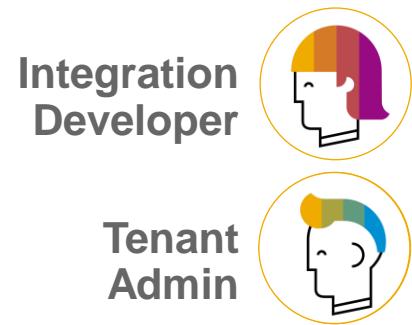


Integration
Developer



Tenant
Admin

Display and manage lock entries



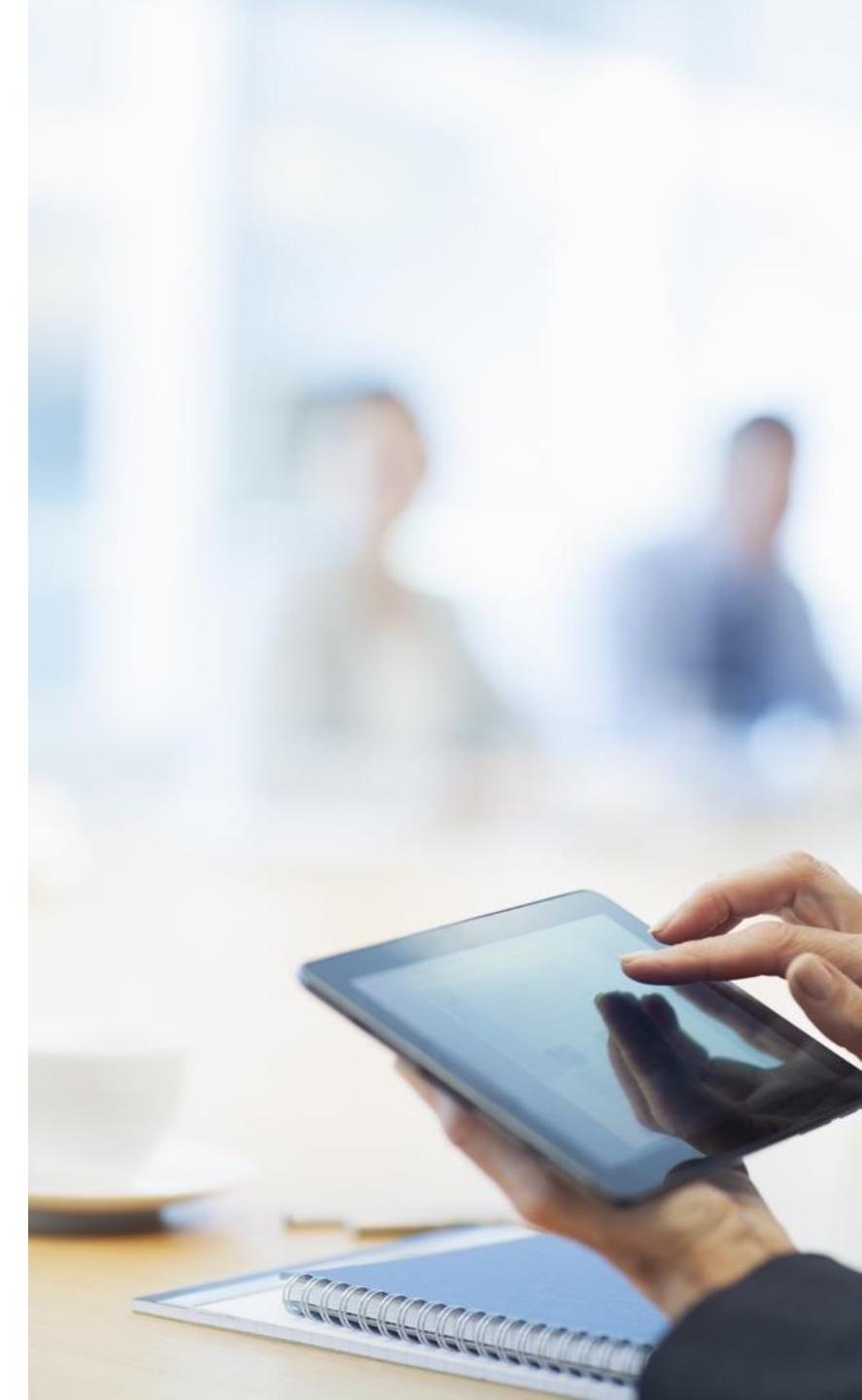
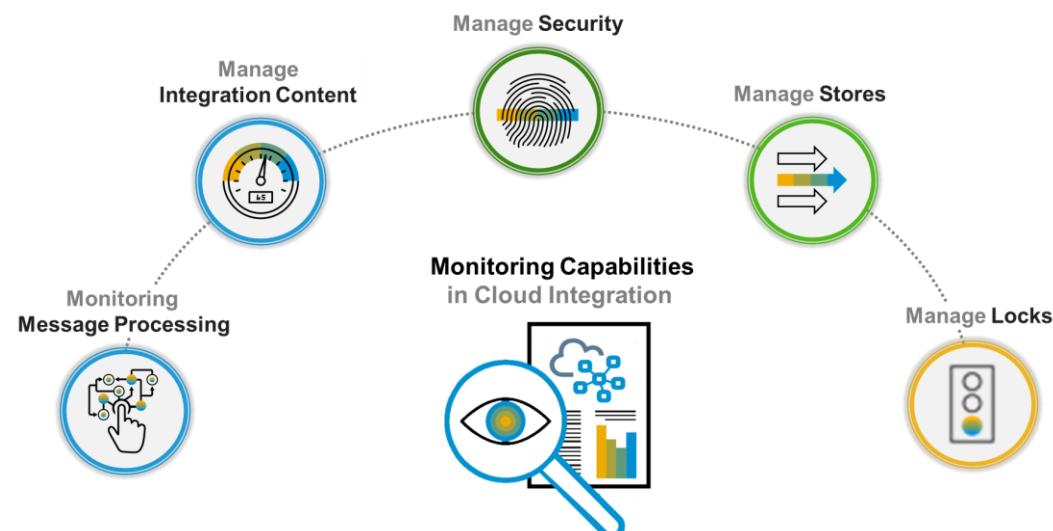
A photograph showing a close-up of a person's hands typing on a laptop keyboard. The scene is bathed in warm, golden sunlight streaming through a window, creating a strong lens flare effect. The laptop screen is visible in the background, and the overall atmosphere is bright and focused.

Demo

Monitoring and running integration flows

Summary

- Strong technical monitoring capabilities
- Management of deployed integration content
- Efficiently troubleshoot errors of processed messages and get insight into the message content
- Test secure connectivity to remote systems



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