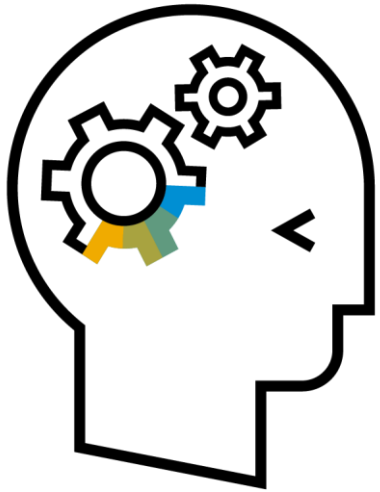
Week 4: Broaden Your Horizon

# Unit 1: Consuming Remote OData APIs

# Cloud Integration-centric view

## How can I…

- **…check for failed messages?**
  Access the message monitor, select the integration scenario, select status Failed, select the time, and check the result
- **…download an integration flow?**
  Navigate to the Designer, open the package, and click Download
- **…check for expired certificates?**
  Navigate to the Operations view, open the keystore monitor, and check all certificates
- **…monitor the JMS resource usage?**
  Navigate to the Operations view, open the message queues monitor, and click Details for JMS Resources



**Can I also do this remotely, outside the Web interface?**
**Can I automate these processes?**

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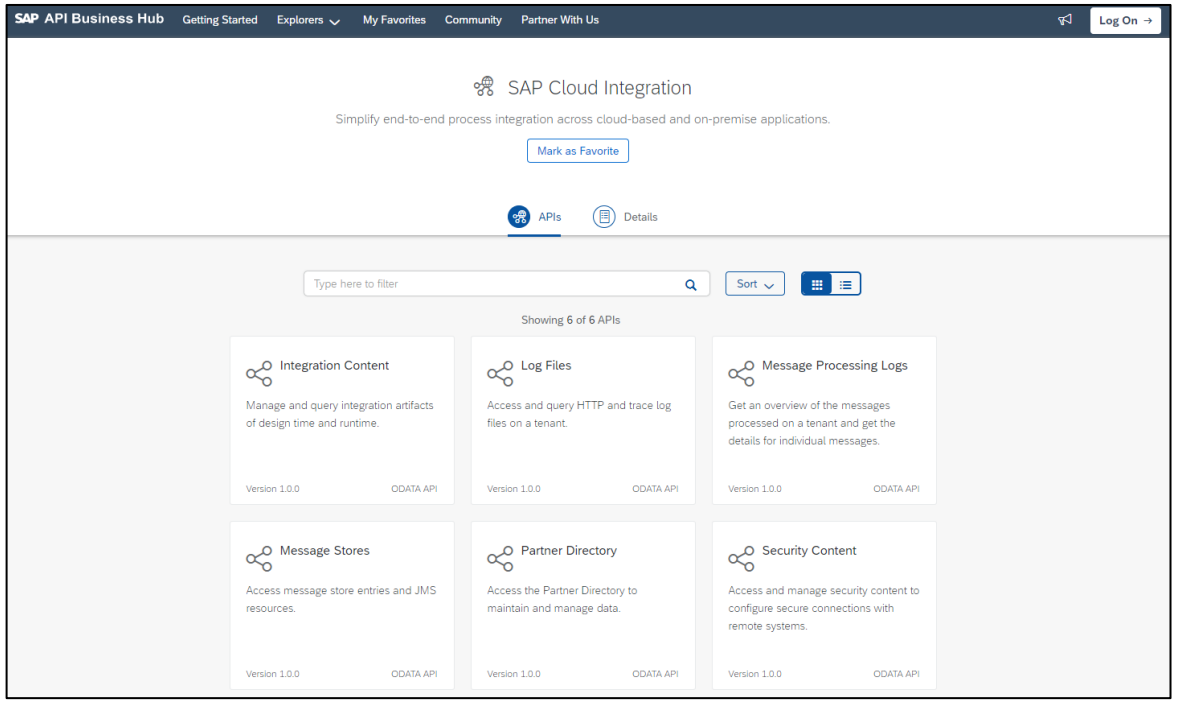
# OData APIs on SAP API Business Hub

SAP API Business Hub contains an API package **SAP Cloud Integration.** There you will find OData APIs for Cloud Integration, enabling you to trigger the following actions:

- Manage and query integration artifacts
- Access HTTP and trace log files*
- Get the details of the messages processed
- Access message store entries and JMS resources
- Manage the partner directory content
- Access and manage security artifacts




**Using the OData APIs, it is possible to integrate Cloud Integration content into central, company-wide processes**

* Only available on Neo as of July 2021

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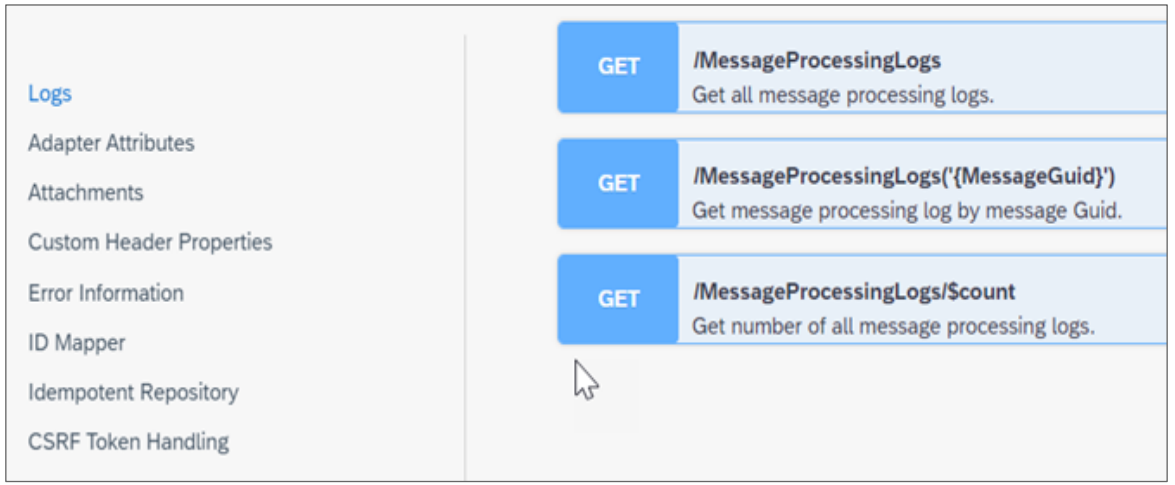
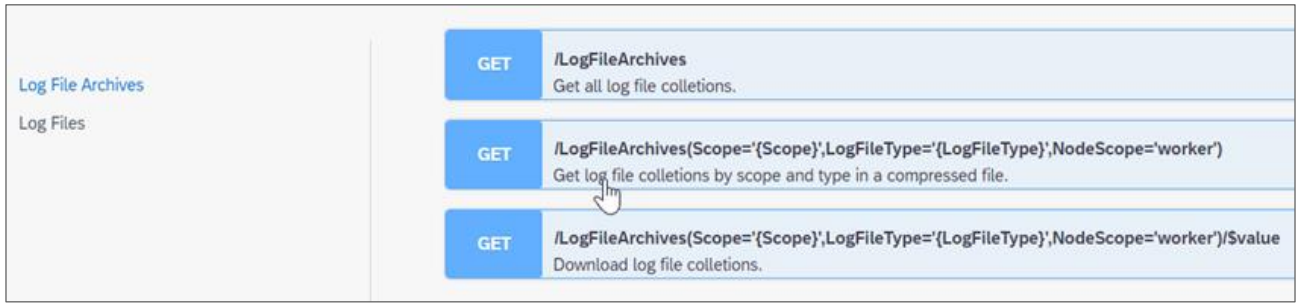
# Resources – integration content, message processing logs, and log files


Integration Content




Message Processing Logs




Log Files*

* Only available on Neo

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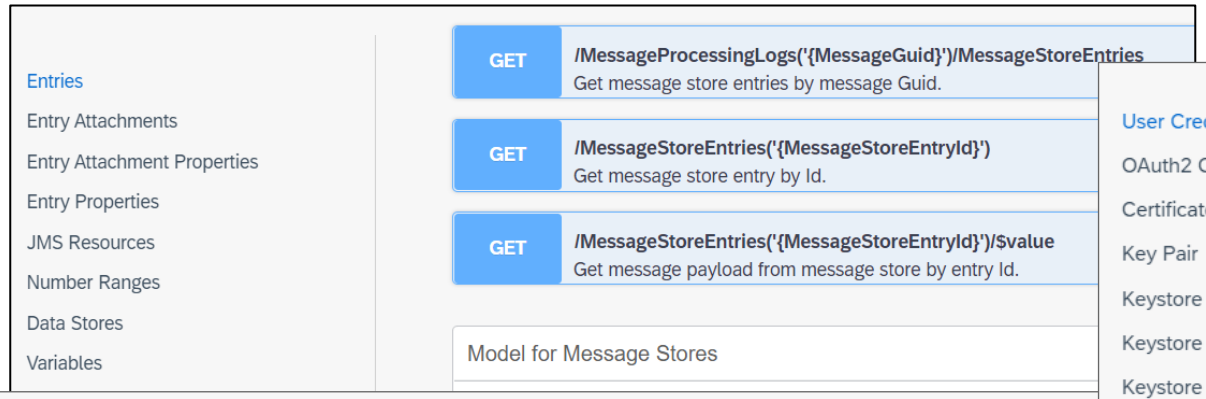
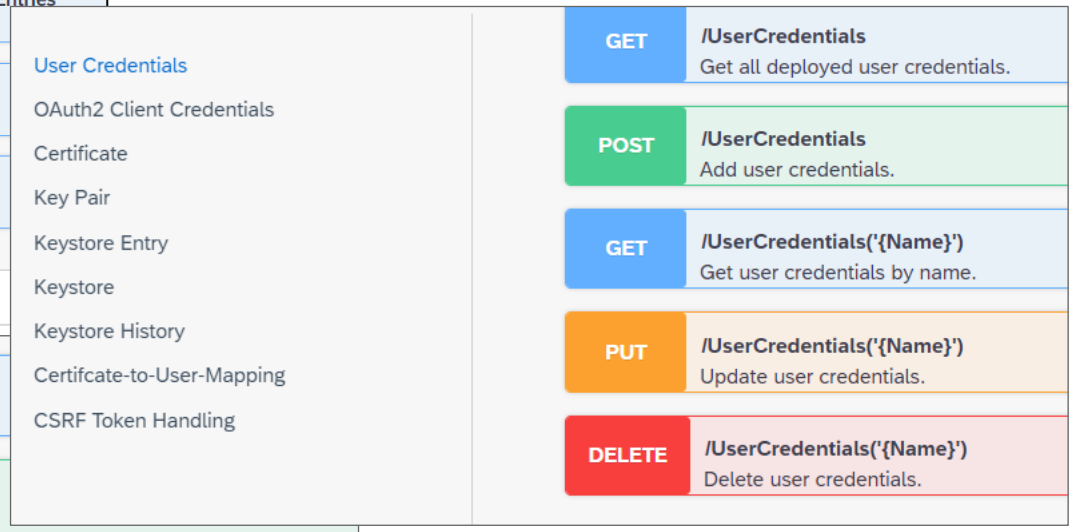
# Resources – message stores, security content, and Partner Directory

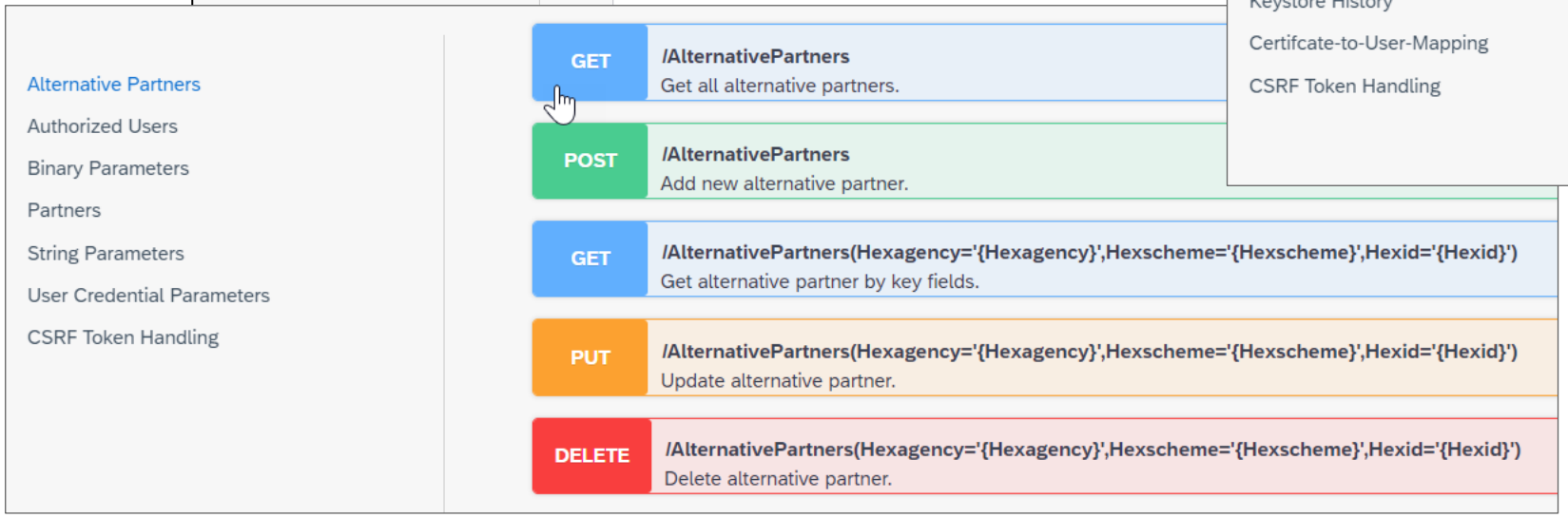
## Message Stores




## Security Content




## Partner Directory

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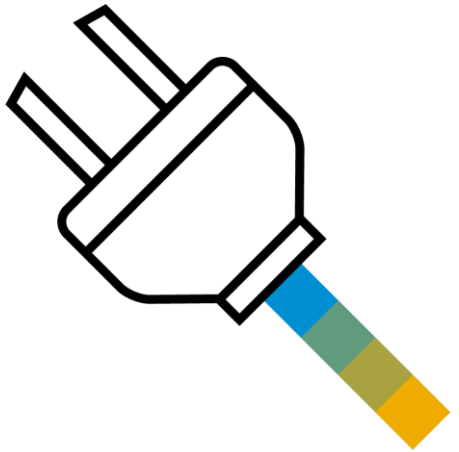
# Technical setup

1. Set up the inbound connection with either Basic or OAuth authentication

**Related Information**

Setting Up Inbound HTTP Connections (for API Clients), Cloud Foundry Environment

Setting Up Inbound HTTP Connections (for API Clients), Neo Environment



2. Call the OData APIs

- `https://<tmn>/api/v1/MessageProcessingLogs`

  Returns all message processing logs.

- `https://<tmn>/api/v1/MessageProcessingLogs('<Guid>')`

  Returns the message processing log with the specified message Guid.

- `https://<tmn>/api/v1/MessageProcessingLogs?$filter=MessageGuid eq '<Guid>'`

  Returns all message processing logs associated with the specified message Guid.

- `https://<tmn>/api/v1/MessageProcessingLogs/$count`

  Returns the total number of message processing logs.

- `https://<tmn>/api/v1/MessageProcessingLogs('<Guid>')/Attachments`

  Returns the attachments of the message processing log with the specified message Guid.

- OData API
  - API Details
    - Integration Content
    - Log Files
    - Message Processing Logs
    - Message Stores
    - Partner Directory
    - Security Content
  - Authentication
  - Query Options

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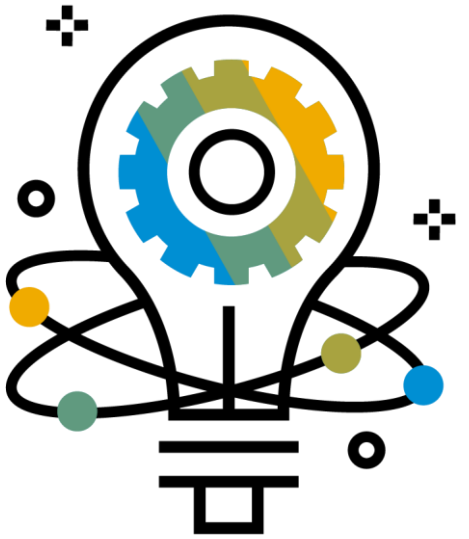
# Use cases

## OData APIs enable plenty of use cases:

- Steering integration flow logic from outside using Partner Directory APIs
- Central / customized monitoring
- Detailed performance analysis of integration flows
- Continuous integration / Continuous delivery
- Transport of integration content across tenants
- Alerting on failed integrations or expiring keys
- Notification on high JMS usage



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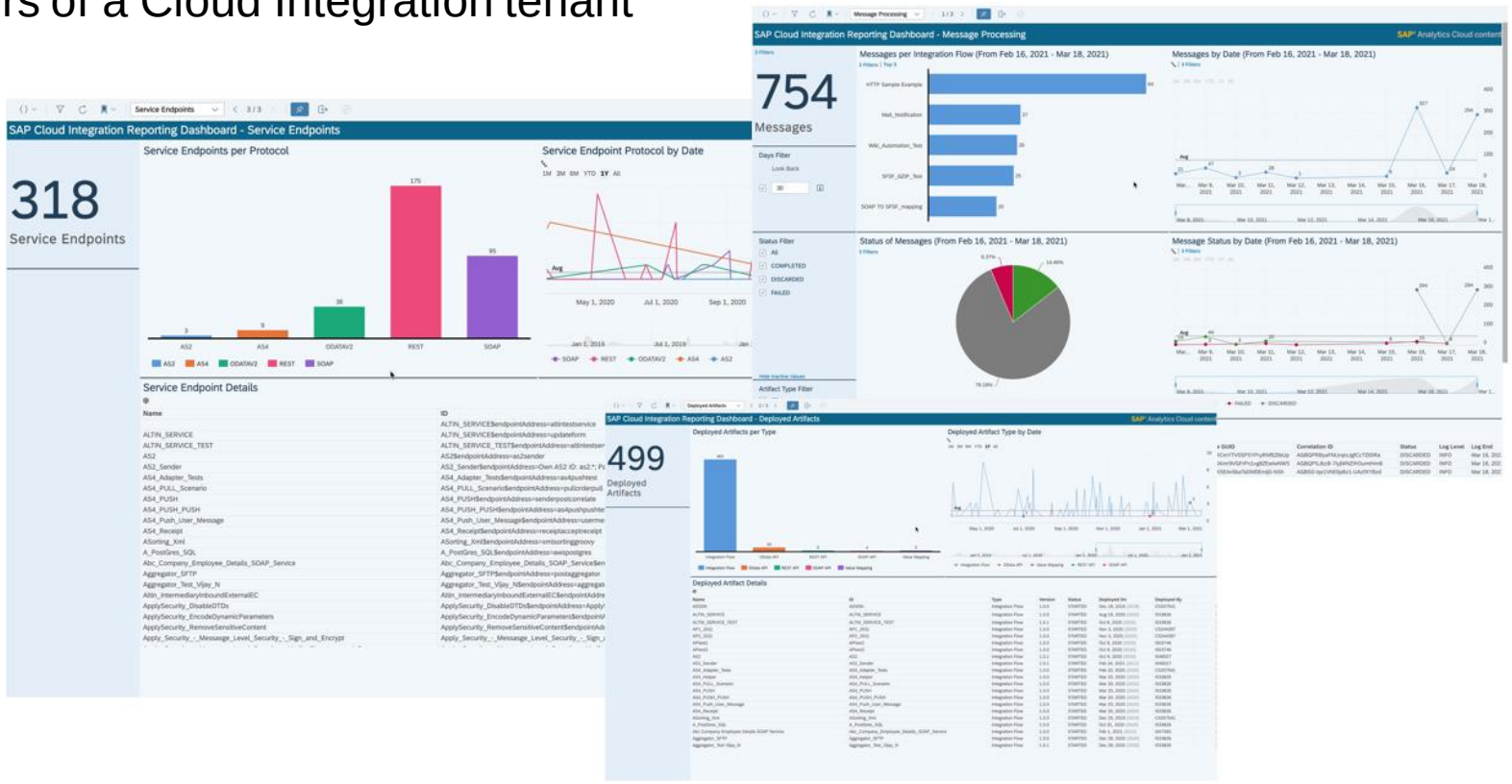
# Example: SAP Analytics Cloud

- Intuitive and interactive reporting dashboard
- Based on Cloud Integration remote OData APIs
- Relevant key performance indicators of a Cloud Integration tenant
- Views for
  - Message Processing
  - Deployed Artifact
  - Service Endpoints

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# Demo

# Summary

- The Cloud Integration OData APIs enable you to work with content and logs remotely.
- The OData APIs are available on SAP API Business Hub.
- There are plenty of use cases enabled by the OData APIs.
- Use filters and paging for good performance.

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Week 4: Broaden Your Horizon

# Unit 2: Simplifying API Development Using a Low Code Approach

Simplifying API development using a low code approach

# Lifecycle of an API

**Design**

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

**Integration Developer**

Design using API Designer

**Develop**

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

**Integration Developer**

Implement in Cloud Integration using a graphical modeler (low code platform) with pre-built steps and adapters

**Manage**

Protect your APIs from security threats, manage traffic, cache your data

**Integration Developer**

Secure, protect, and manage in API Portal using a graphical modeler (low code platform) with pre-built policies. Publish to API Business Hub Enterprise


**Monitor**

Monitor and analyze your API usage, performance, and errors

**DevOps & SRE**

Continuously monitor in Cloud Integration and API Portal

**Engage**

Engage with application developers and monetize your digital assets through APIs

**Application Developer**

Discover and consume from API Business Hub Enterprise

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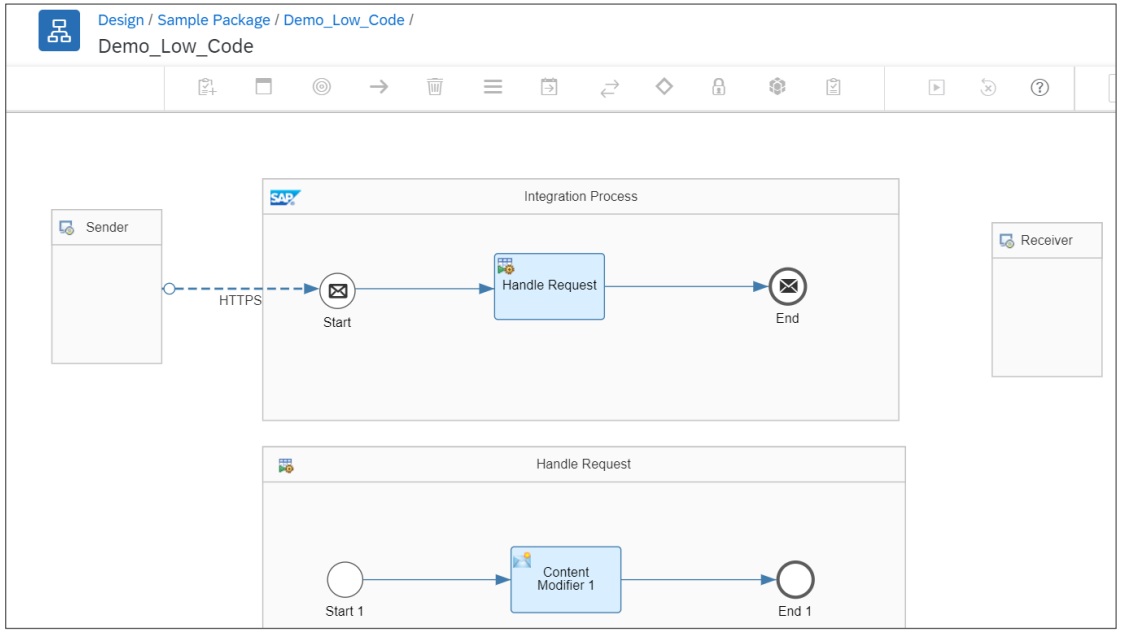
# SAP Integration Suite – a low-code development platform

SAP Integration Suite can act as a low code development platform for building and managing SOAP, REST, and OData APIs.

## Benefits of Low Code API Development

1. Improved agility
2. Higher productivity
3. Decreased costs
4. Better customer experience
5. Faster transformation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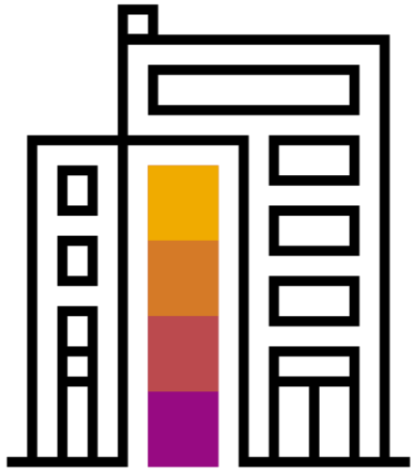
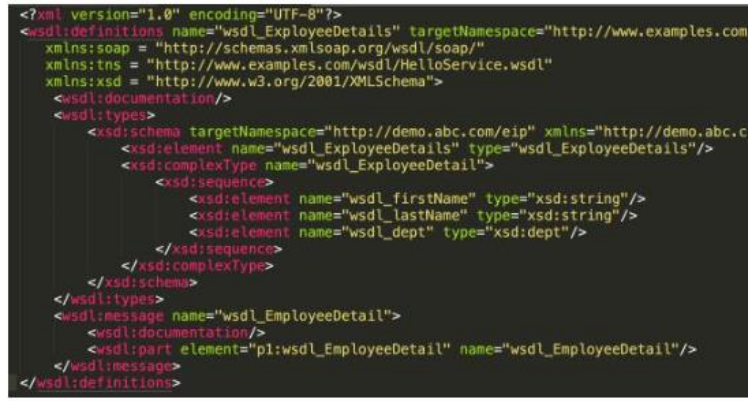
# Scenario walkthrough



Abc Company

| db_firstName | db_lastName | db_dept |
|---|---|---|
| Amar | Kumar | HR |
| Deepak | D | Sales |
| Kamlesh | Z | Finance |

Database



```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions name="wsdl_ExployeeDetails" targetNamespace="http://www.examples.com
   xmlns:soap = "http://schemas.xmlsoap.org/wsdl/soap/"
   xmlns:tns = "http://www.examples.com/wsdl/HelloService.wsdl"
   xmlns:xsd = "http://www.w3.org/2001/XMLSchema">
    <wsdl:documentation/>
    <wsdl:types>
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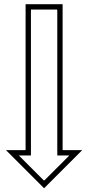
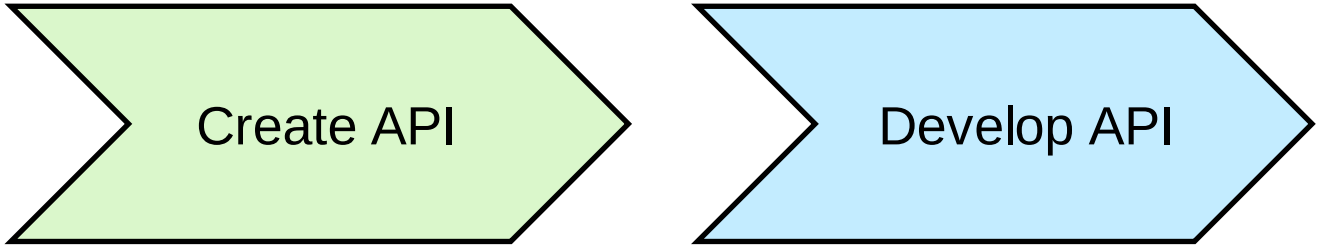
    </wsdl:types>
    <wsdl:message name="wsdl_EmployeeDetail">
        <wsdl:documentation/>
        <wsdl:part element="p1:wsdl_EmployeeDetail" name="wsdl_EmployeeDetail"/>
    </wsdl:message>
</wsdl:definitions>
```

SOAP Service/WSDL



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# Demo

# Summary

- Simplify API design using open standards for easy consumption.
- Implement/develop the APIs to add the necessary business logic in a low code approach.
- Abstract and automate the lifecycle of an API using graphical/visual interfaces with SAP Integration Suite, a low code integration platform.

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# Unit 3: Discovering and Managing APIs

# Lifecycle of an API

**Design**

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

**Integration Developer**

Design using API Designer

**Develop**

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

**Integration Developer**

Implement in Cloud Integration using a graphical modeler (low code platform) with pre-built steps & adapters

**Manage**

Protect your APIs from security threats, manage traffic, cache your data

**Integration Developer**

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**Monitor**

Monitor and analyze your API usage, performance, and errors

**DevOps & SRE**

Continuously monitor in Cloud Integration and API Portal

**Engage**

Engage with application developers and monetize your digital assets through APIs

**Application Developer**

Discover and consume from API Business Hub Enterprise

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# API Management – added value

API Management can be used to securely publish APIs from any cloud solution (for example, Cloud Integration).

**Following are the benefits that API Management provides:**

1. Best-of-breed complete API management solution
2. Full API lifecycle management
3. API monetization and data insights
4. Permissions based on roles for discovering products and consuming applications in SAP API Business Hub enterprise
5. Tight integration with SAP (cloud, on-premise, iPaaS, mobile) and non-SAP
6. EU data protection and enterprise-grade API security best practices


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# Create an API provider connecting to Cloud Integration

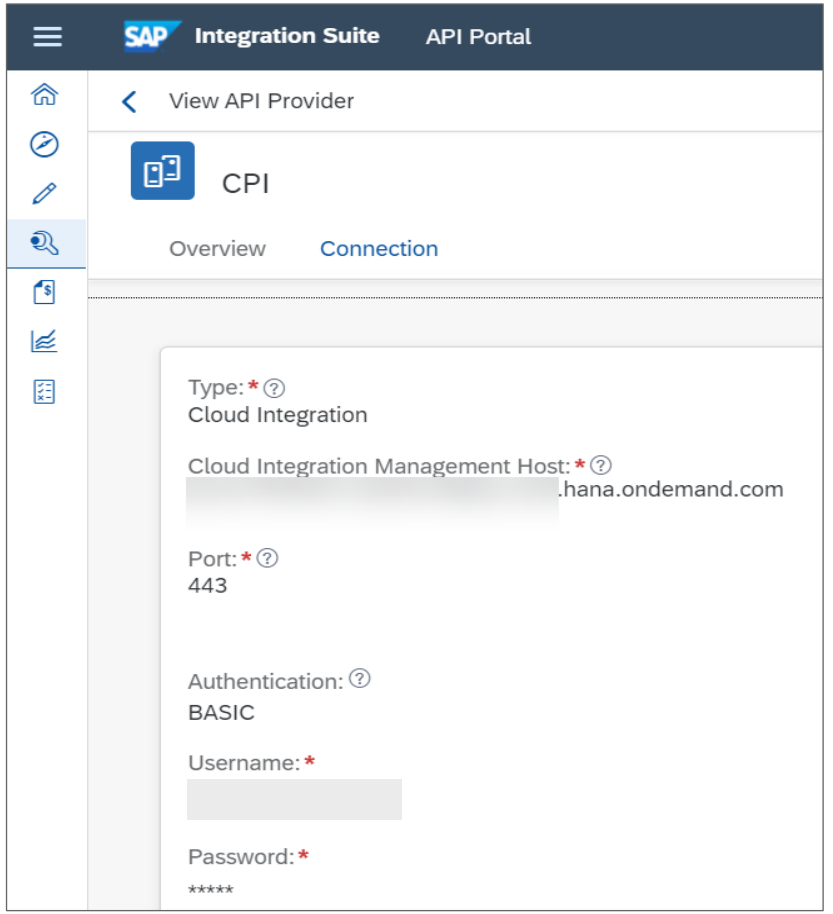
Discover

An **API provider** is a concept in API Management that defines the connection details for services running on specific hosts whose details you want to access.

## Advantages of creating API providers in API Management

1. Connect to different backend on-premise/cloud systems
2. Discover services/interfaces
3. Simplify configuration in case of backend changes

Provider connecting to Cloud Integration

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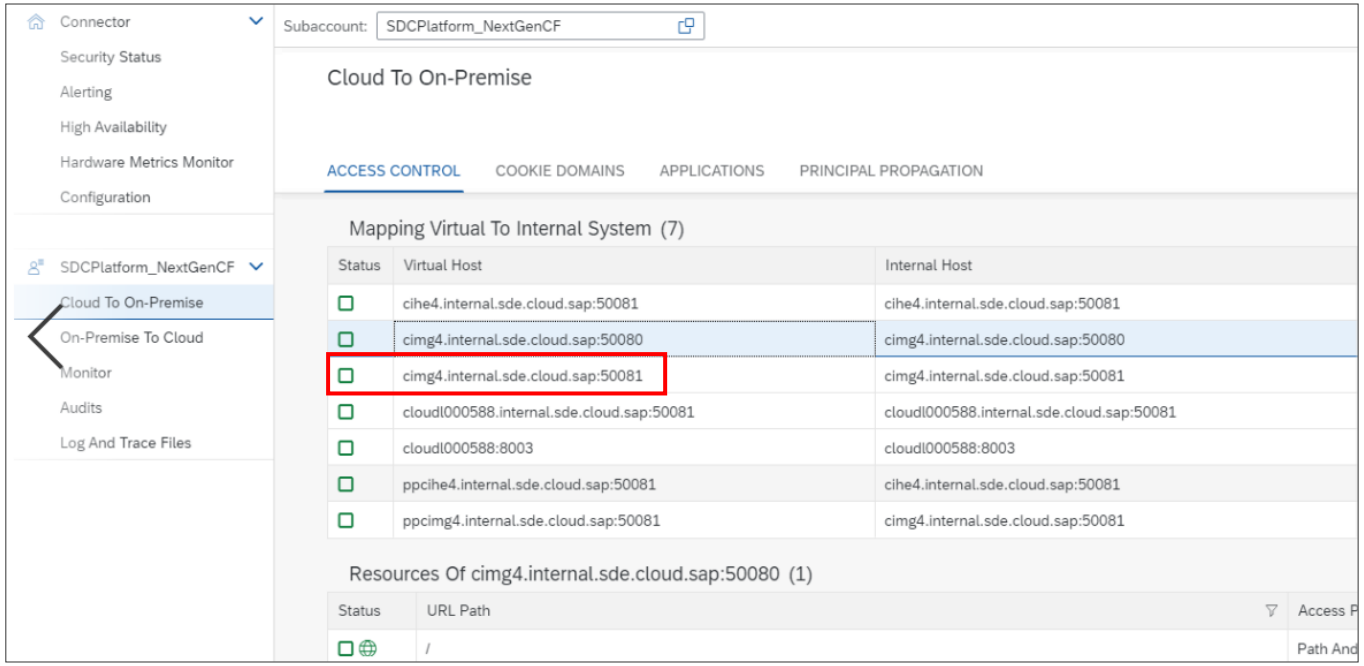
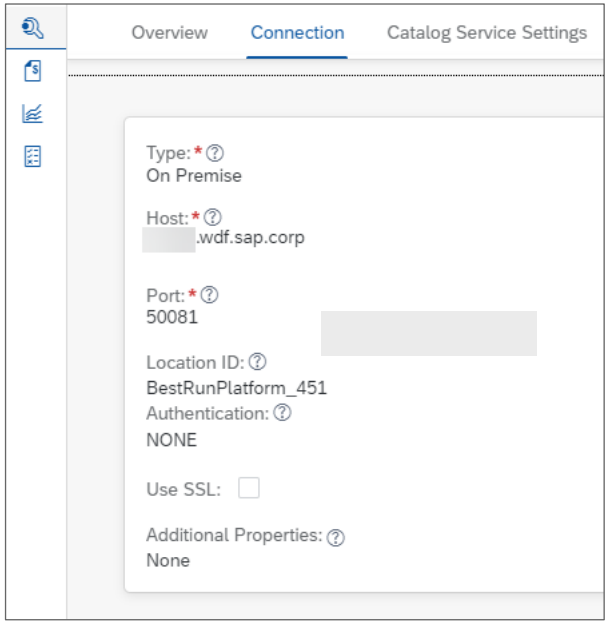
# Create an API provider connecting to on-premise backend

Discover

The cloud connector enables you to securely connect applications on SAP BTP with your on-premise systems. Using the cloud connector, you can manage your on-premise APIs via SAP Integration Suite.




Provider connecting to on-premise backend

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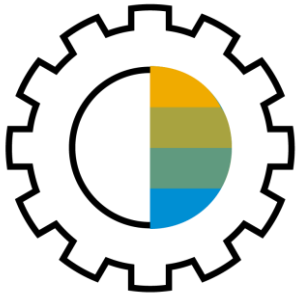
# Manage, secure, govern, and monitor the endpoints with API Management



Policies for traffic management, security, caching, mediation, transformation, and service orchestration

Insights and analytics on the API's traffic, usage, error reporting, and monitoring

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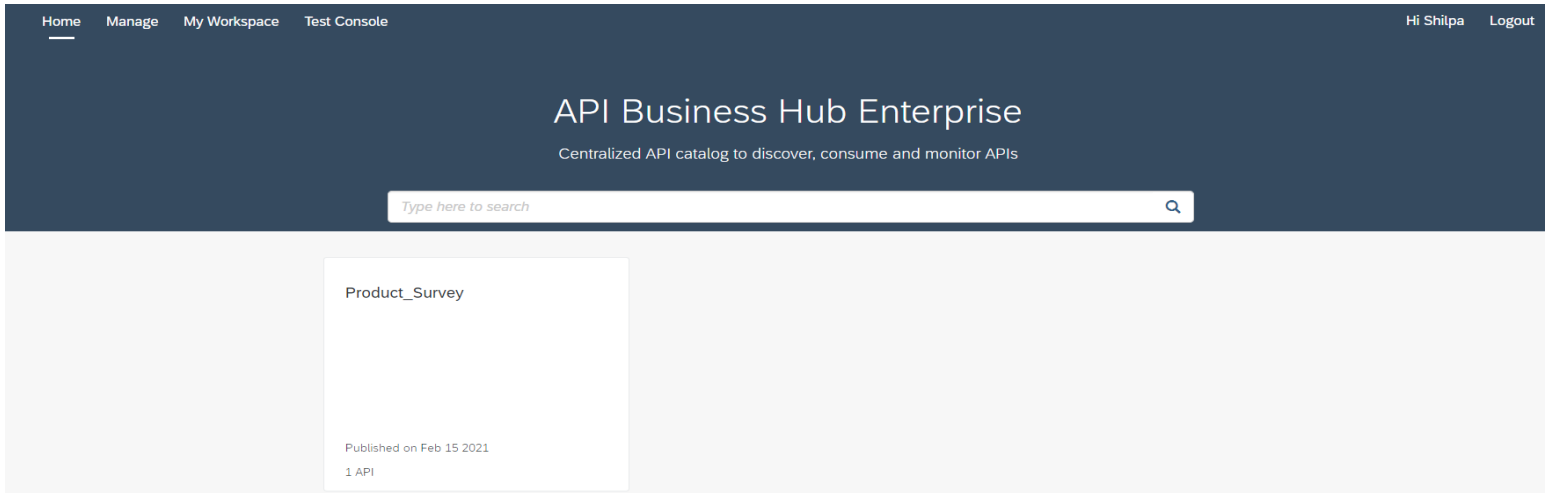
# Engage with application developers

API Business Hub Enterprise is a rebranding of Developer Portal and is like the customer's instance of SAP API Business Hub. The benefits are:

1. Central API catalog for application developers
2. Multiple instances of SAP API Management can publish the APIs to central API Business Hub Enterprise
3. Easy import of 'Externally Managed APIs'
4. Seamless search, exploration, and discovery of the listed APIs
5. Expedite API consumption with client SDK and code snippets

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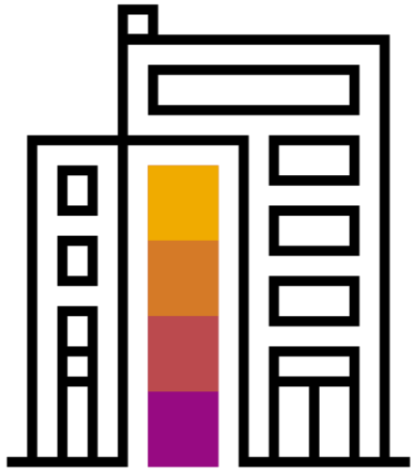
# Scenario walkthrough



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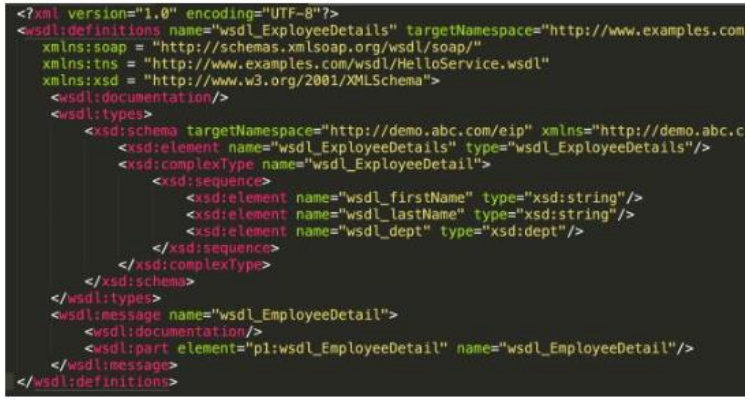

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   xmlns:xsd = "http://www.w3.org/2001/XMLSchema">
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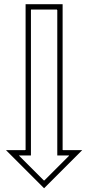
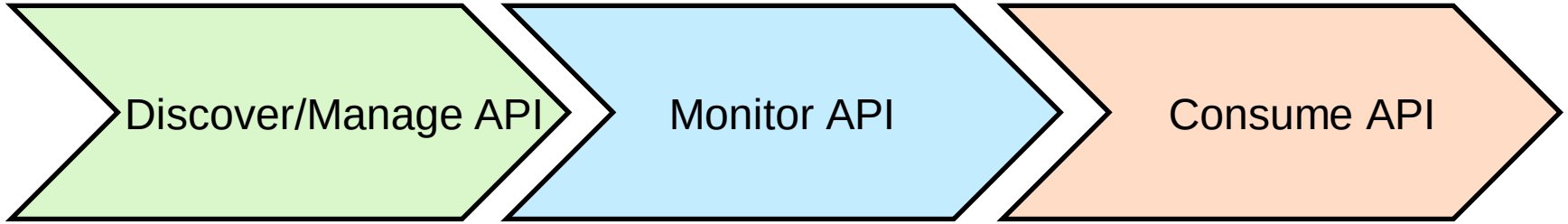
```

SOAP Service/WSDL



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# Demo

# Summary

- Auto-discovery of APIs from backends.
- Use API Management capability of SAP Integration Suite to manage, secure, govern, and monitor the endpoints.
- Create custom applications for user-centric scenarios.

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Week 4: Broaden Your Horizon

# Unit 4: Centralized Monitoring and Alerting Using SAP Cloud ALM

# Three strategic platforms to match customer reality

## SAP Solution Manager


## SAP Focused Run


## SAP Cloud ALM


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# A cloud-based application lifecycle management offering

Fully integrated ALM suite for small, medium, and larger customers

**SAP SaaS offering** built natively on SAP BTP

**SAP Cloud ALM for the integrated intelligent suite**

- For cloud-centric customers
- Managing cloud and hybrid scenarios

In this unit, we will look deeper into

- **Integration & exception monitoring**
- **Health monitoring**


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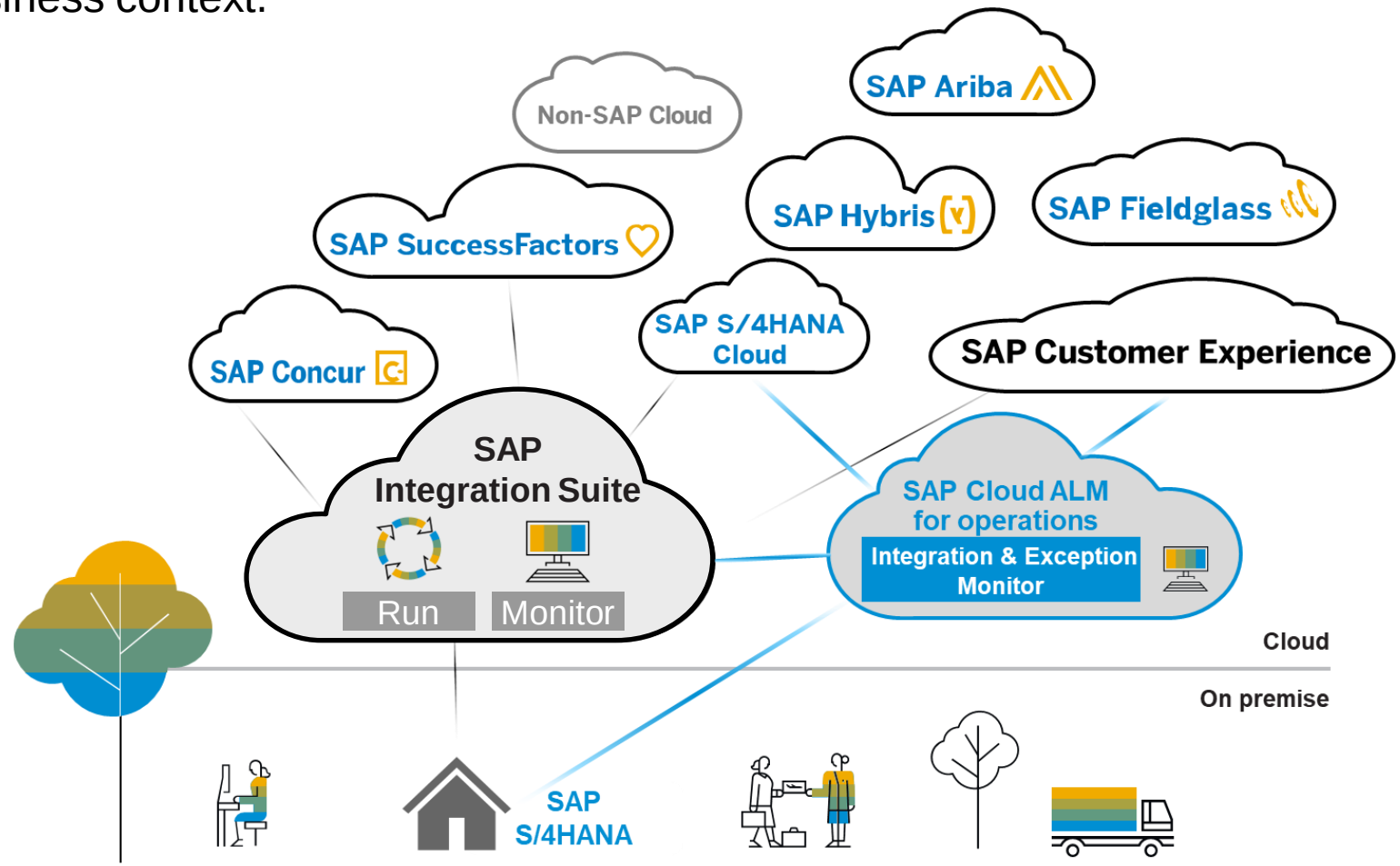
# What is integration & exception monitoring?

Goal is to offer one central end-to-end monitoring and alerting tool for hybrid SAP-centric landscapes that brings the technical flow closer to the business context.

- **Unified monitoring tool** for all integration scenarios focusing on **exceptional and error situations**
- **End-to-end monitoring** with correlation of messages based on SAP Passport mechanism
- **Closes gap between business and IT** during issue resolution process




Available for SAP Cloud Integration in Neo and multi-cloud environment

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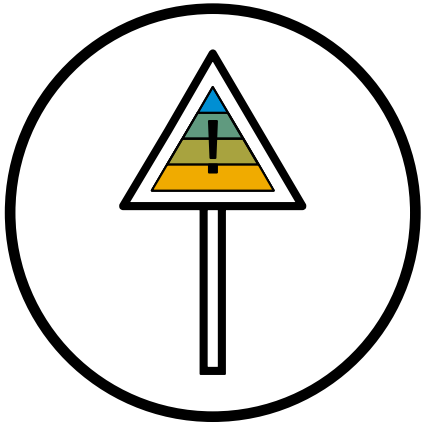
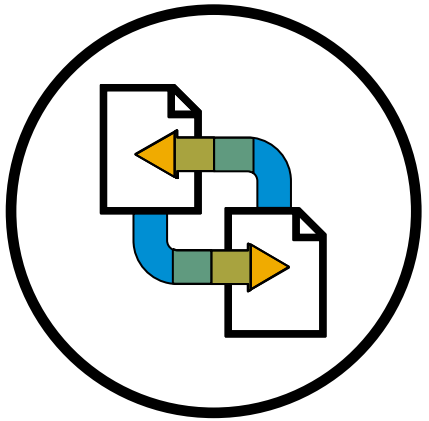
# What can you do with integration & exception monitoring?



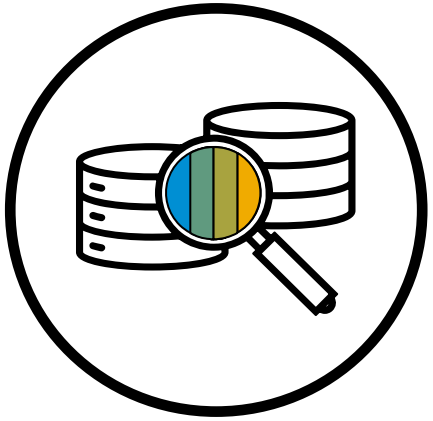
## Monitoring

Detailed status overview per cloud service on the incoming and outgoing messages



## Tracking

Search and track single messages



## Alerting

Notifications of critical issues

Overview on scenario-related alerts

## Analytics

Overview on historical data to identify trends

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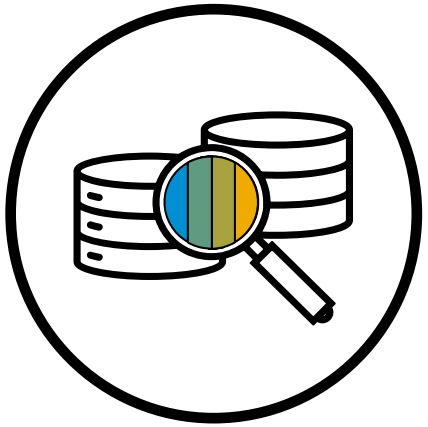
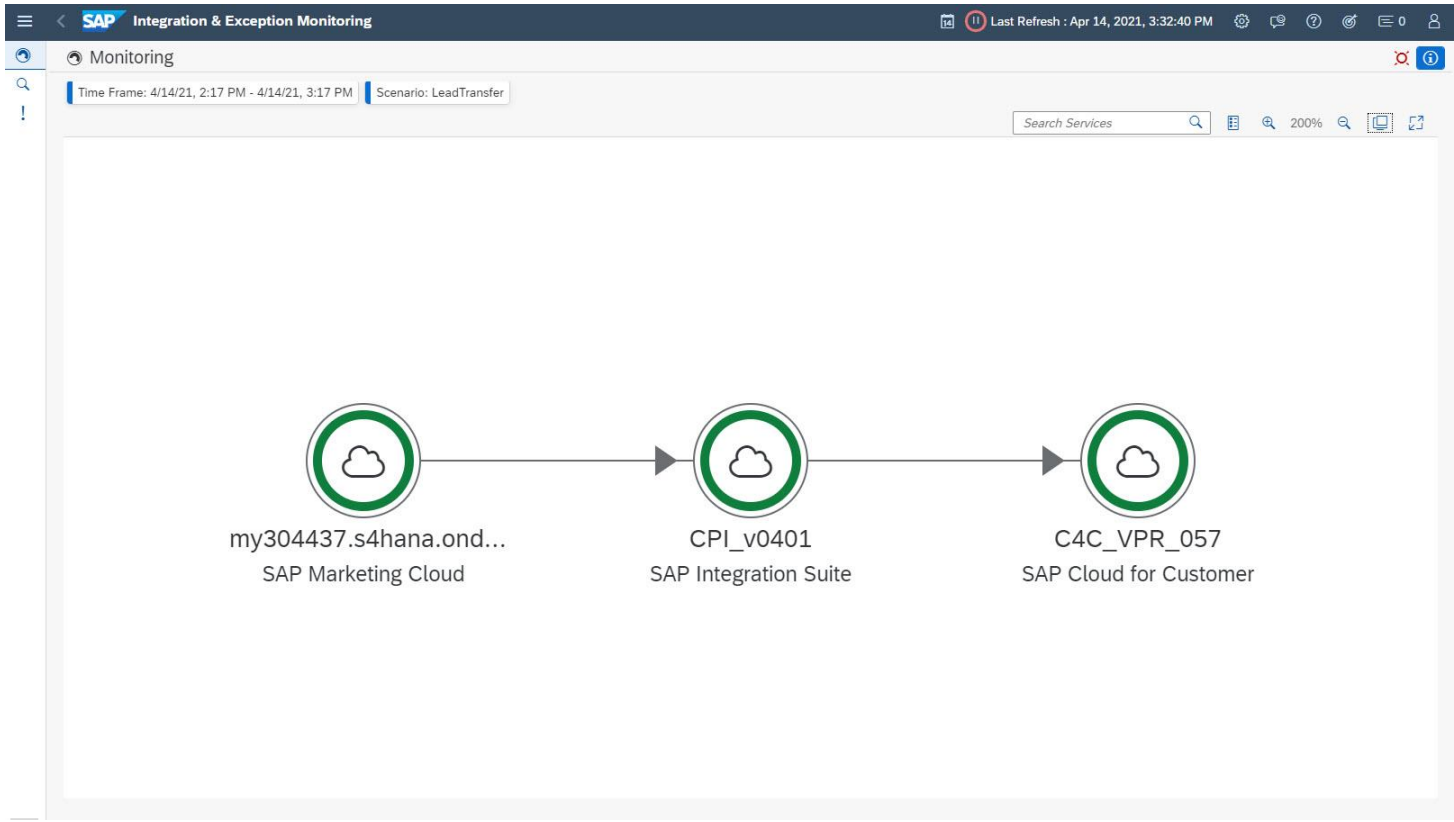
# As an integration owner, I like to know…

## Monitoring



**What** is the status of my integration scenario?

**What** is the status of incoming and outgoing messages of my Cloud Integration tenants?

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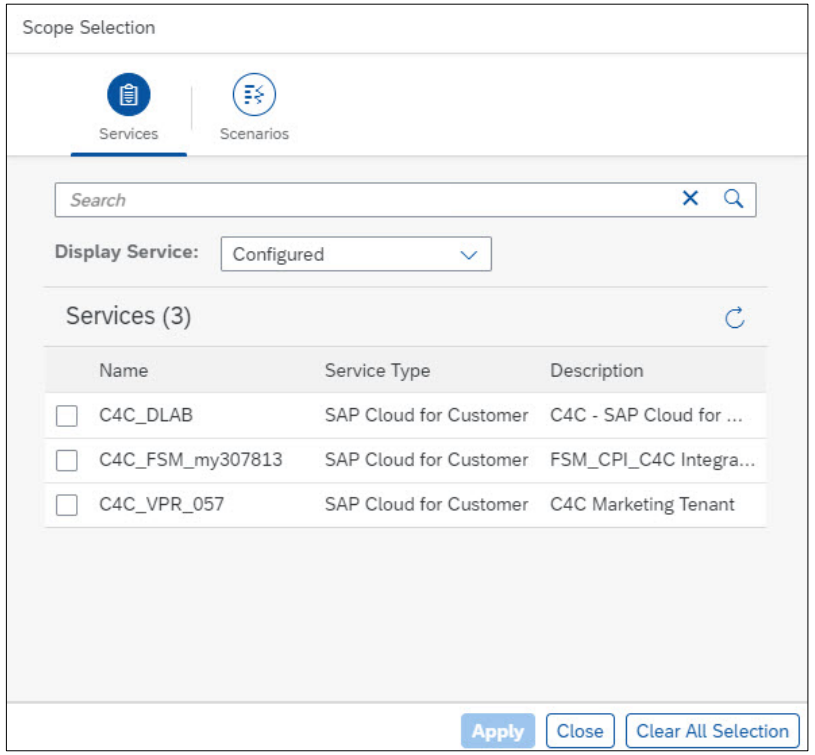
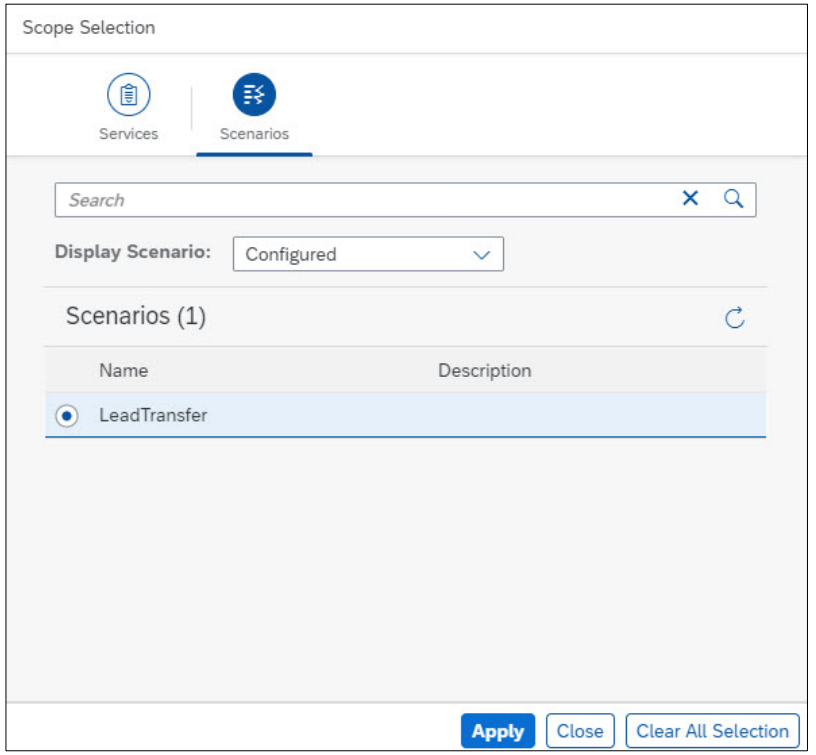
# Different monitoring entry points with scope selection

**Services**-based entry point, e.g., for monitoring messages across all Cloud Integration tenants




**Scenario**-based entry point, e.g., for monitoring messages along a lead campaign scenario




Configuration of available services and scenarios by integration architects

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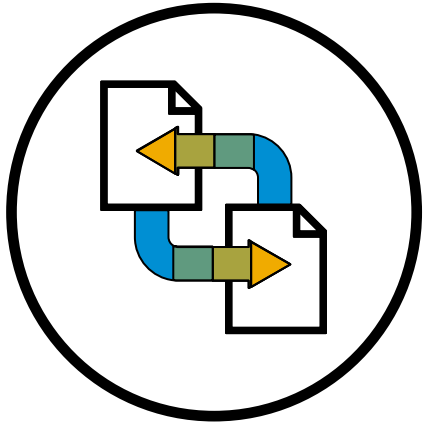
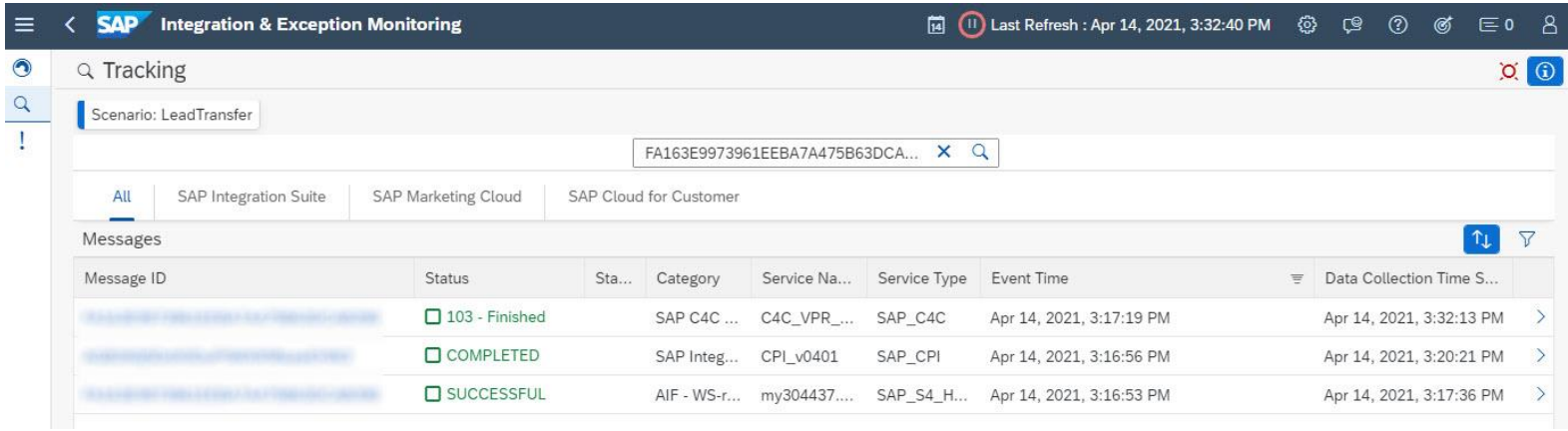
# As a business power user or integration owner, I like to know…

## Tracking






**Where** is my message?

How can I **search** via technical or business attributes?

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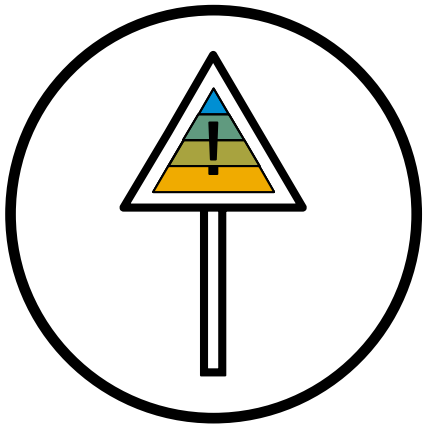
# As an integration owner, I like to know…

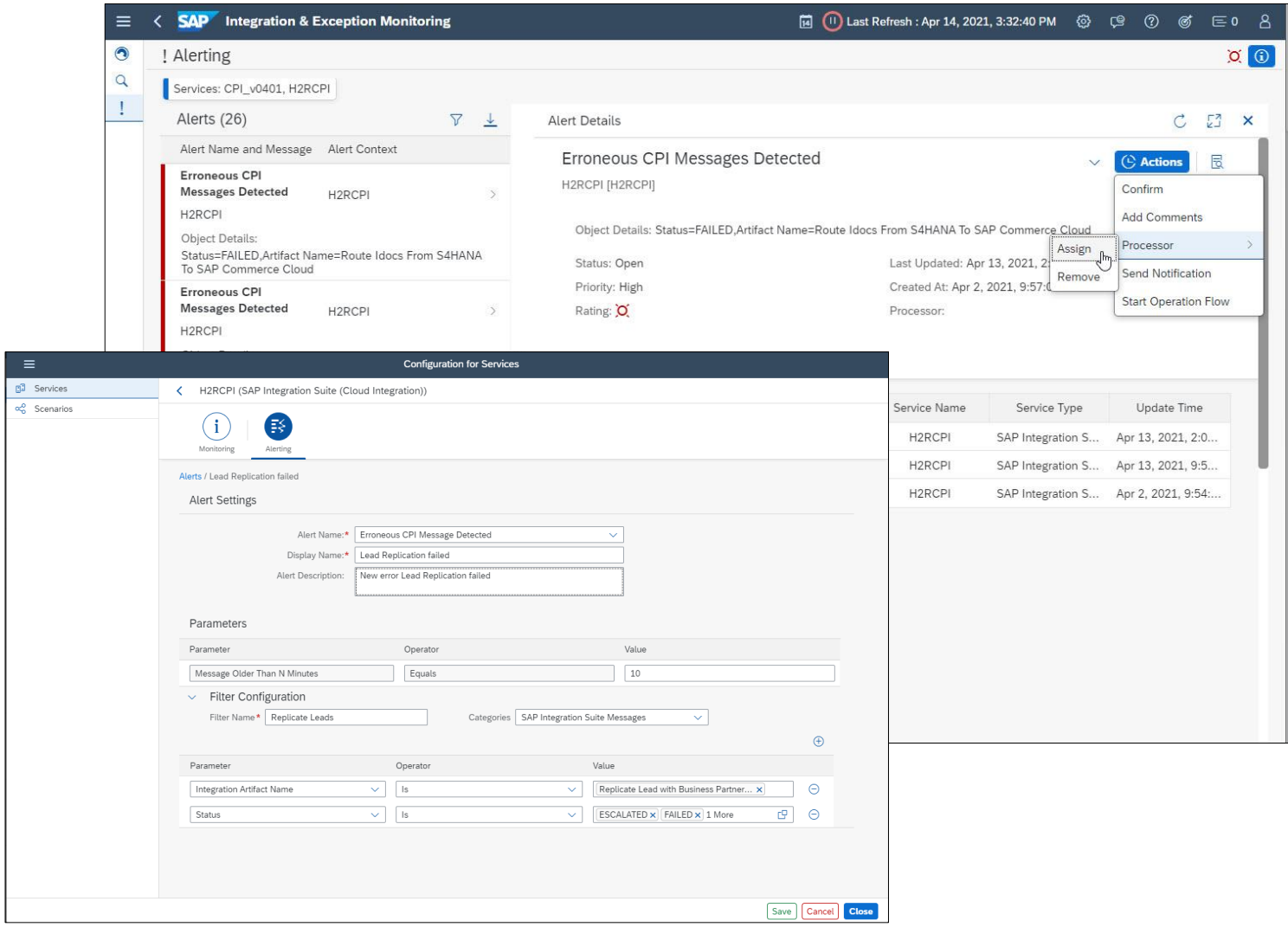
## Alerting



**Am I aware** of all critical issues?

Is the problem already **known**?

How can I **correct** the problem?

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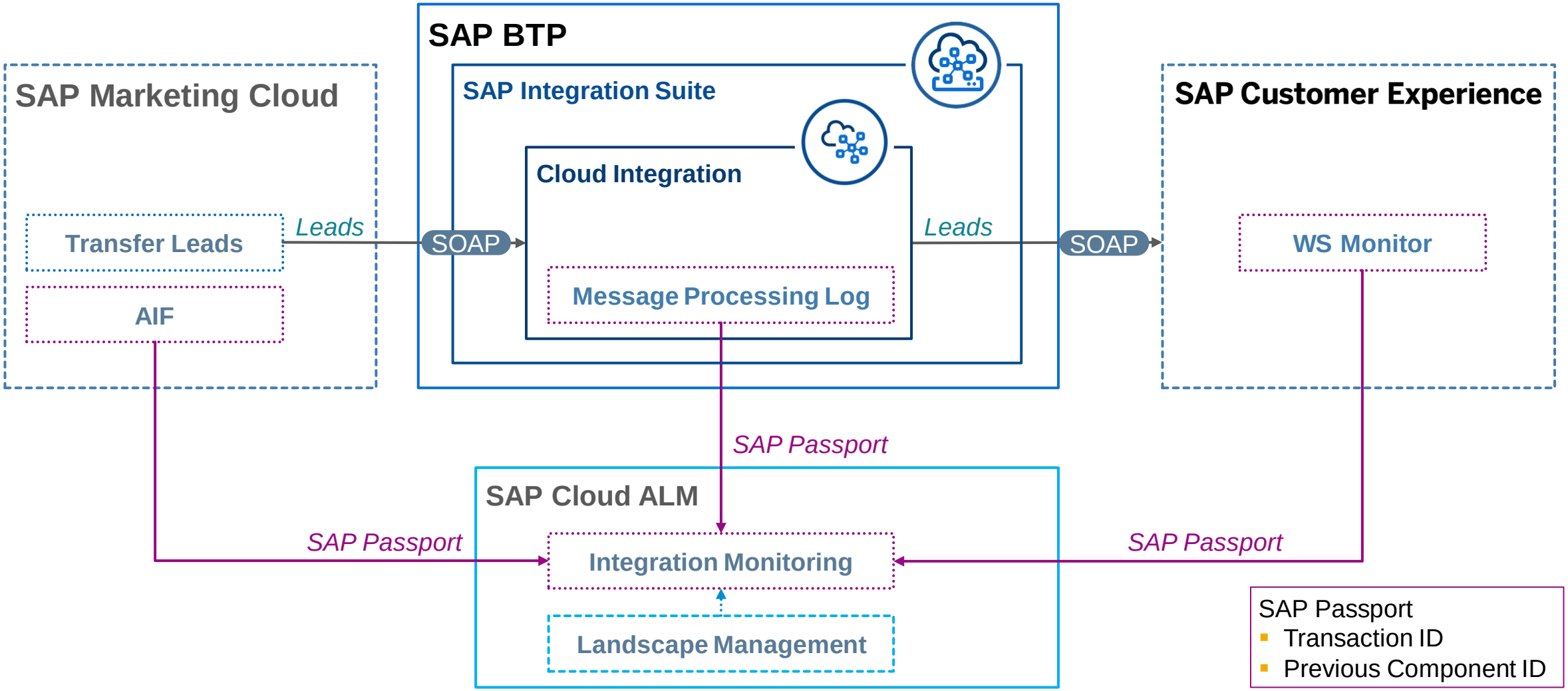
# Demo: Replicate lead from SAP Marketing Cloud to SAP Customer Experience

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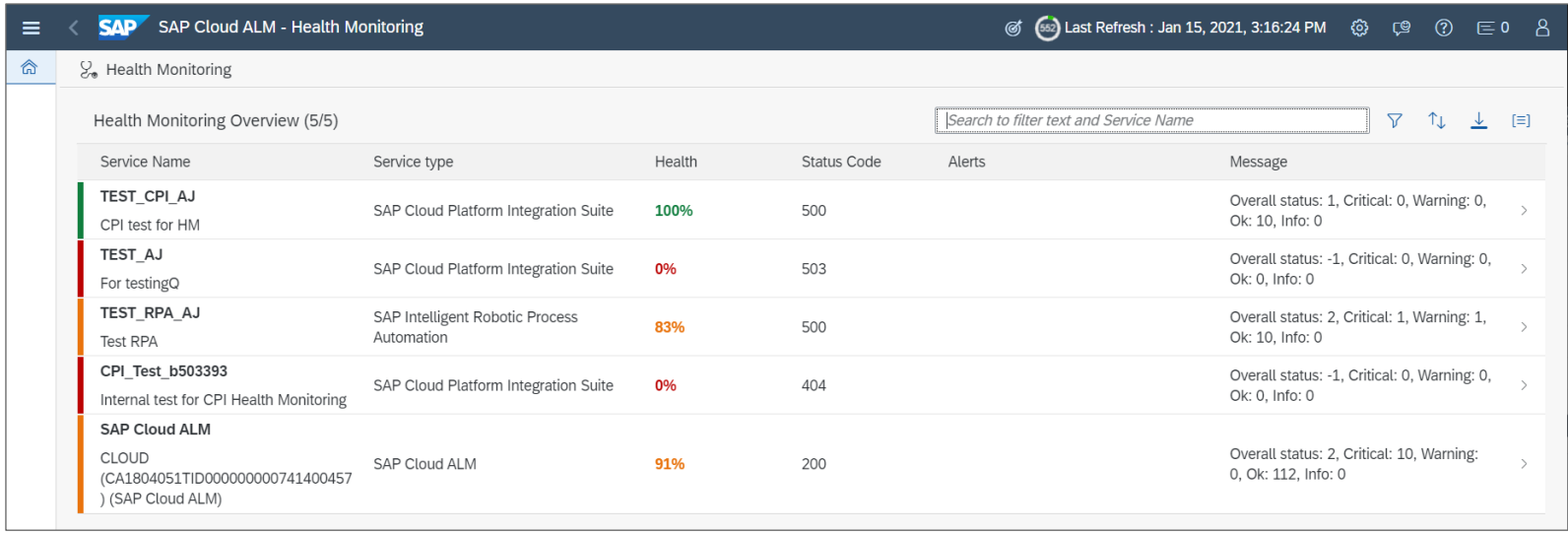
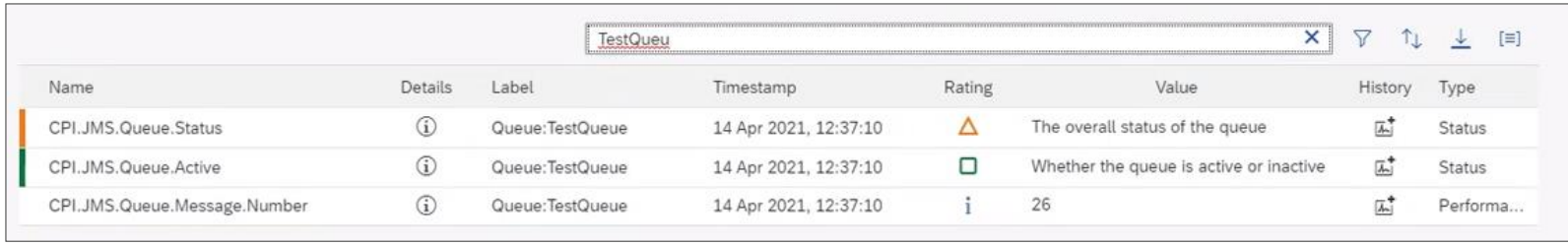
# Demo

# Technical health monitoring of Cloud Integration tenants

- Focusing on technical aspects
- Execution of service-specific checks to test the robustness of a monitored cloud service
- Indicators on JMS queues and further indicators will come
- Empowers tenant admins to react on critical states
- Use historical data to see evolvement
- Assure continuity of all business processes

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# Summary

- Unified end-to-end business and IT monitoring for hybrid SAP-centric landscapes that brings the technical flow closer to the business context
- Integration & exception monitoring with correlation of messages to provide end-to-end visibility
- Tracking of messages based on business context attributes
- Automated alerting for proactive monitoring
- Context-sensitive jump-ins to local monitoring tools such as Cloud Integration monitoring
- Technical health monitoring of cloud services

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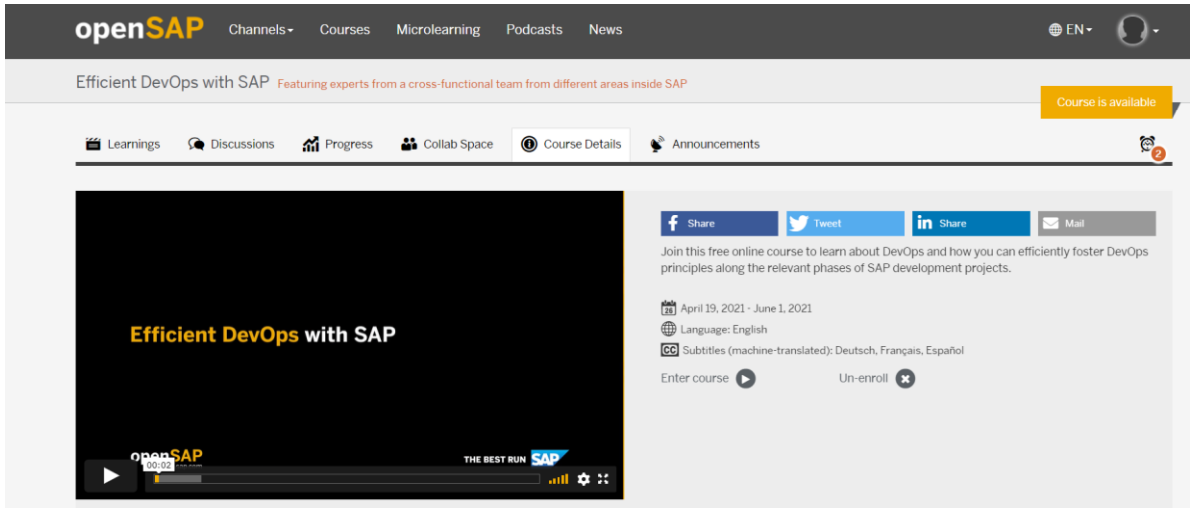
Week 4: Broaden Your Horizon

# Unit 5: Applying DevOps with SAP Integration Suite

# Introduction to DevOps

**DevOps is a culture that combines all professions along the value stream.**
**It enables them to work together from the ideation of a product to operating it.**




https://open.sap.com/courses/devops1

DevOps practices

- Continuous Integration (CI)
  - The practice of merging all developers' working copies to a shared mainline several times a day
  - Empowers development teams to build and test code after each merge as seamlessly as possible
- Continuous Delivery (CD)
  - An approach in which teams produce software in short cycles, ensuring that the software can be reliably released at any time
  - It aims at building, testing, and releasing software with greater speed and frequency

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# DevOps in the context of SAP Integration Suite

- I have made a change to my content, are all my scenarios still working?
- My tenant was updated by SAP, are my scenarios still running?
- How can I test my integration content regularly?
- How can I back up my content?
- The dev team has provided a new version of the content. Is it working?
- My tests are failing. What exactly was changed compared to the old version?
- How can I combine external dev tools and Integration Suite tooling?
- My tests on my test tenant were successful. How can I push the content to my production tenant?

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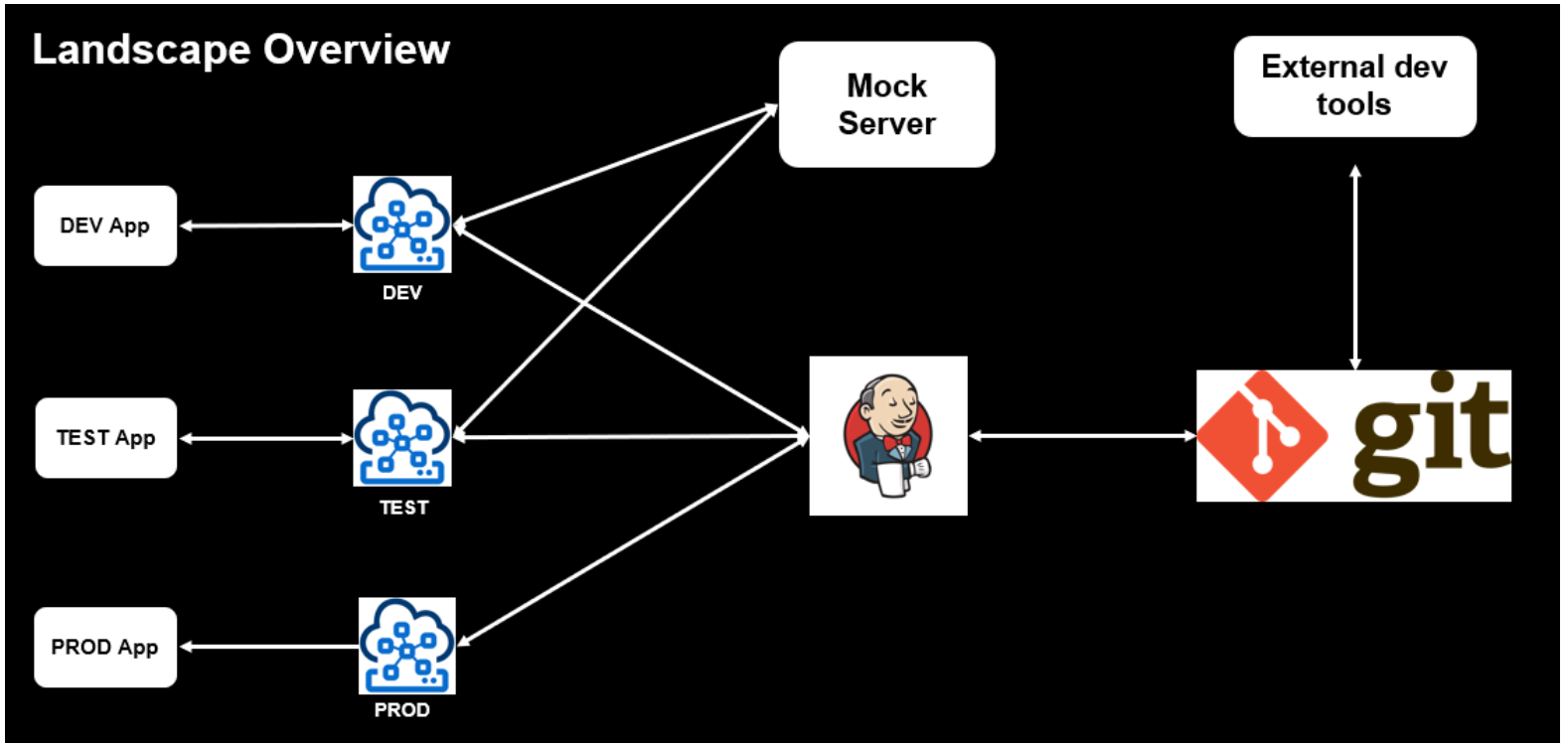
# Solution approach to the given problem statements

- Usage of SAP Integration Suite OData APIs as given on SAP API Business Hub
- Storage of integration artifacts in a version management system like Git
- Orchestration via a build server like Jenkins

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# Advantages of the external approach

- Every customer landscape is different
- E2E DevOps process might be different per customer
  – Approval before deployment required or not?
  – Storage in Git on a regular basis vs. on manual trigger
  – Direct transport between tiers vs. storage in Git
  – What tests should be performed after each tier?
  – What to do after the tests have been performed successfully?
- Different toolset (CI/CD infrastructure) might be used by different customers
- Customers are well trained in their CI/CD infrastructure

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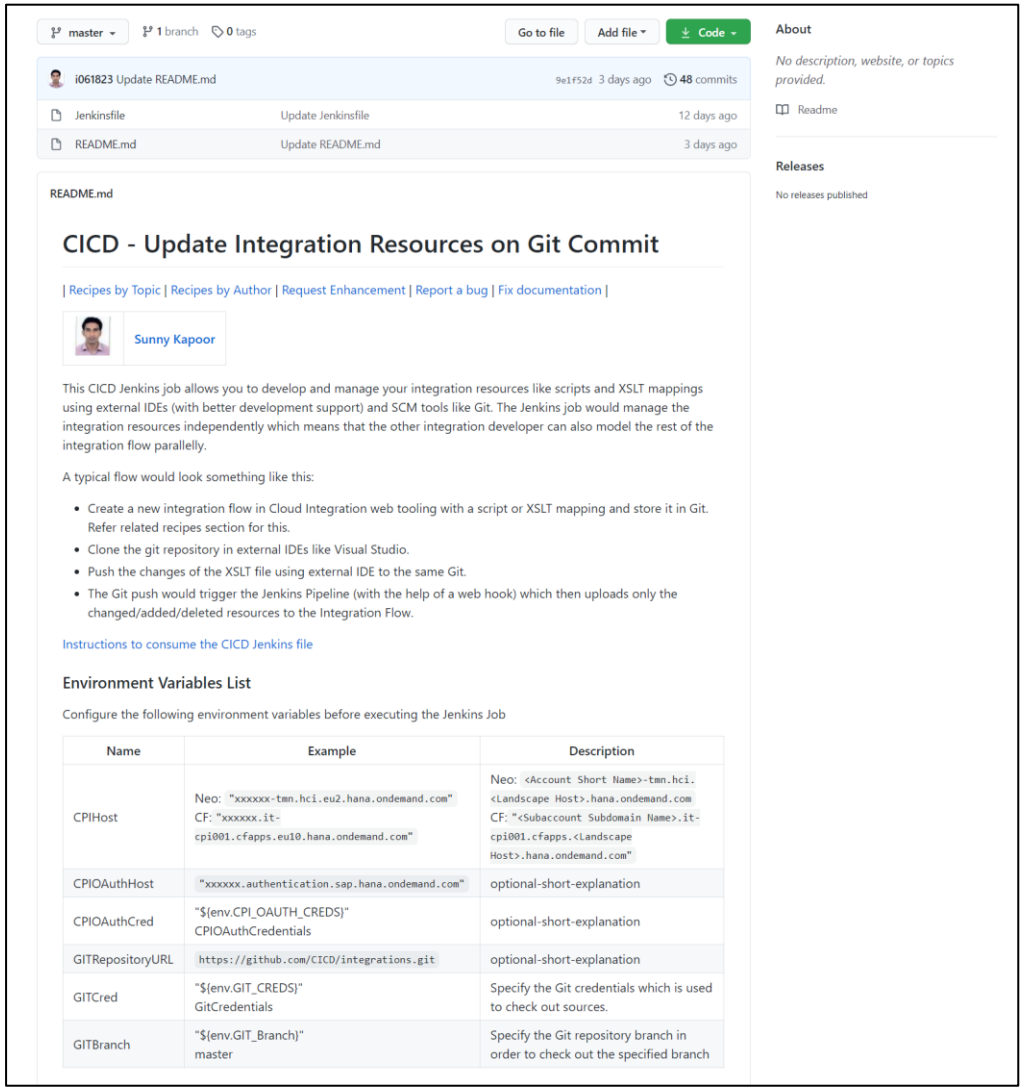
# How to use this approach?

- Pipelines published in our [SAP API Business Hub Community for Integration Recipes]
- For every pipeline a readme file contains all details
- Consumption with a few simple steps
  - Establish access and authorization to OData APIs
  - Setup build server and version management system
  - Deploy parameters like credentials on build server
  - Copy the pipeline jobs into your version management system
  - Configure the pipeline jobs to your needs
  - Run the jobs
- A blog explains all details
- If pipelines are missing, feel free to contribute them



master · 1 branch · 0 tags · Go to file · Add file · Code

i061823 Update README.md 9e1f52d 3 days ago 48 commits

Jenkinsfile — Update Jenkinsfile — 12 days ago

README.md — Update README.md — 3 days ago

About

*No description, website, or topics provided.*

Readme

Releases

No releases published

README.md

## CICD - Update Integration Resources on Git Commit

| Recipes by Topic | Recipes by Author | Request Enhancement | Report a bug | Fix documentation |

Sunny Kapoor

This CICD Jenkins job allows you to develop and manage your integration resources like scripts and XSLT mappings using external IDEs (with better development support) and SCM tools like Git. The Jenkins job would manage the integration resources independently which means that the other integration developer can also model the rest of the integration flow parallelly.

A typical flow would look something like this:

- Create a new integration flow in Cloud Integration web tooling with a script or XSLT mapping and store it in Git. Refer related recipes section for this.
- Clone the git repository in external IDEs like Visual Studio.
- Push the changes of the XSLT file using external IDE to the same Git.
- The Git push would trigger the Jenkins Pipeline (with the help of a web hook) which then uploads only the changed/added/deleted resources to the Integration Flow.

Instructions to consume the CICD Jenkins file

### Environment Variables List

Configure the following environment variables before executing the Jenkins Job

| Name | Example | Description |
|---|---|---|
| CPIHost | Neo: `"xxxxxx-tmn.hci.eu2.hana.ondemand.com"` CF: `"xxxxxx.it-cpi001.cfapps.eu10.hana.ondemand.com"` | Neo: `<Account Short Name>-tmn.hci.<Landscape Host>.hana.ondemand.com` CF: `"<Subaccount Subdomain Name>.it-cpi001.cfapps.<Landscape Host>.hana.ondemand.com"` |
| CPIOAuthHost | `"xxxxxx.authentication.sap.hana.ondemand.com"` | optional-short-explanation |
| CPIOAuthCred | "${env.CPI_OAUTH_CREDS}" CPIOAuthCredentials | optional-short-explanation |
| GITRepositoryURL | `https://github.com/CICD/integrations.git` | optional-short-explanation |
| GITCred | "${env.GIT_CREDS}" GitCredentials | Specify the Git credentials which is used to check out sources. |
| GITBranch | "${env.GIT_Branch}" master | Specify the Git repository branch in order to check out the specified branch |

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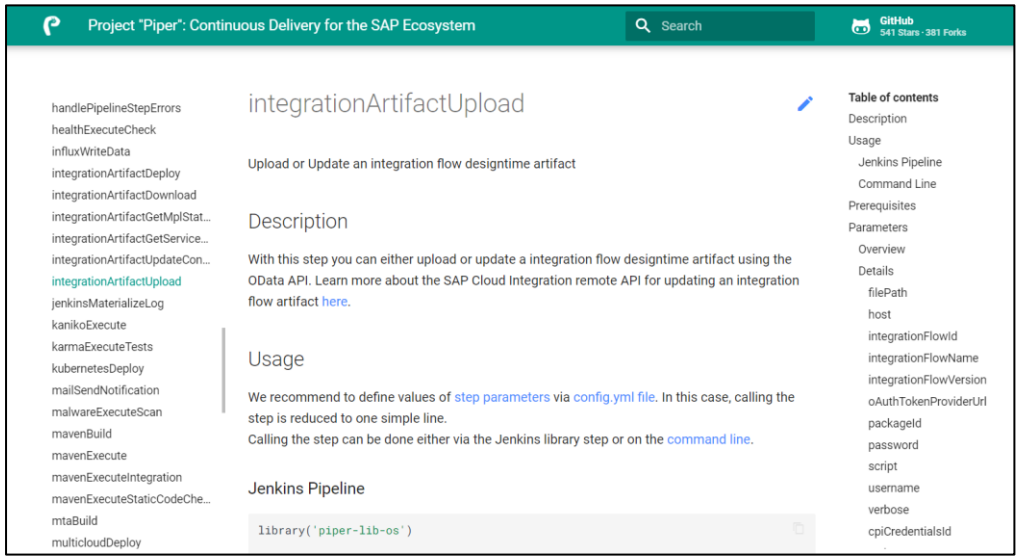
# One step further – Project Piper

- As multiple OData calls are required for some Integration Suite operations, the pipeline coding might become complex
- What if we could separate the logical operation from the technical implementation?
- This can be achieved using the OS project Piper (https://www.project-piper.io/)
- We have release an initial set of Piper steps and described them in a detailed blog
- If enhancements are required, the community can contribute

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# Demo

# Summary

- Using our pipeline scripts you can start your DevOps journey for the SAP Integration Suite today.
- Also try out our project steps of project Piper.
- Automate your integration processes!

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