

Unit 3 – Managing APIs

Developing with SAP Integration Suite

C_CPI_2404

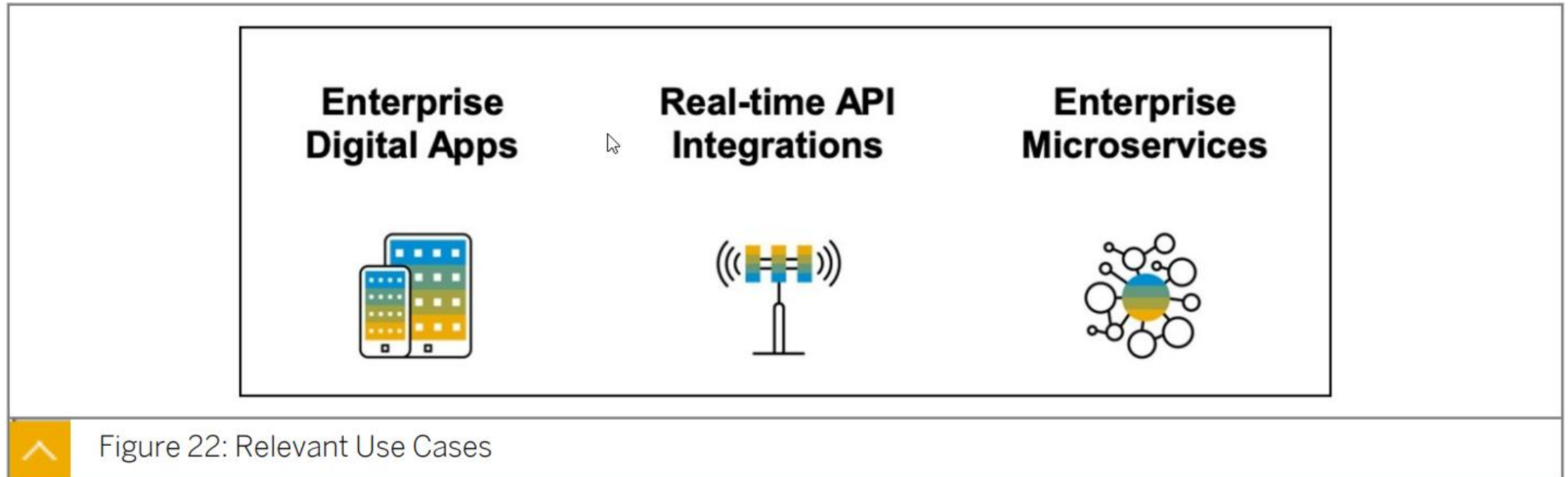
Agenda

- SAP API Management
- Components of SAP API Management
- Creating an API Provider
- Creating an API (proxy)
- Using Policies
- Creating a Product
- Logging and Monitoring
- Key Summary Points

SAP API Management

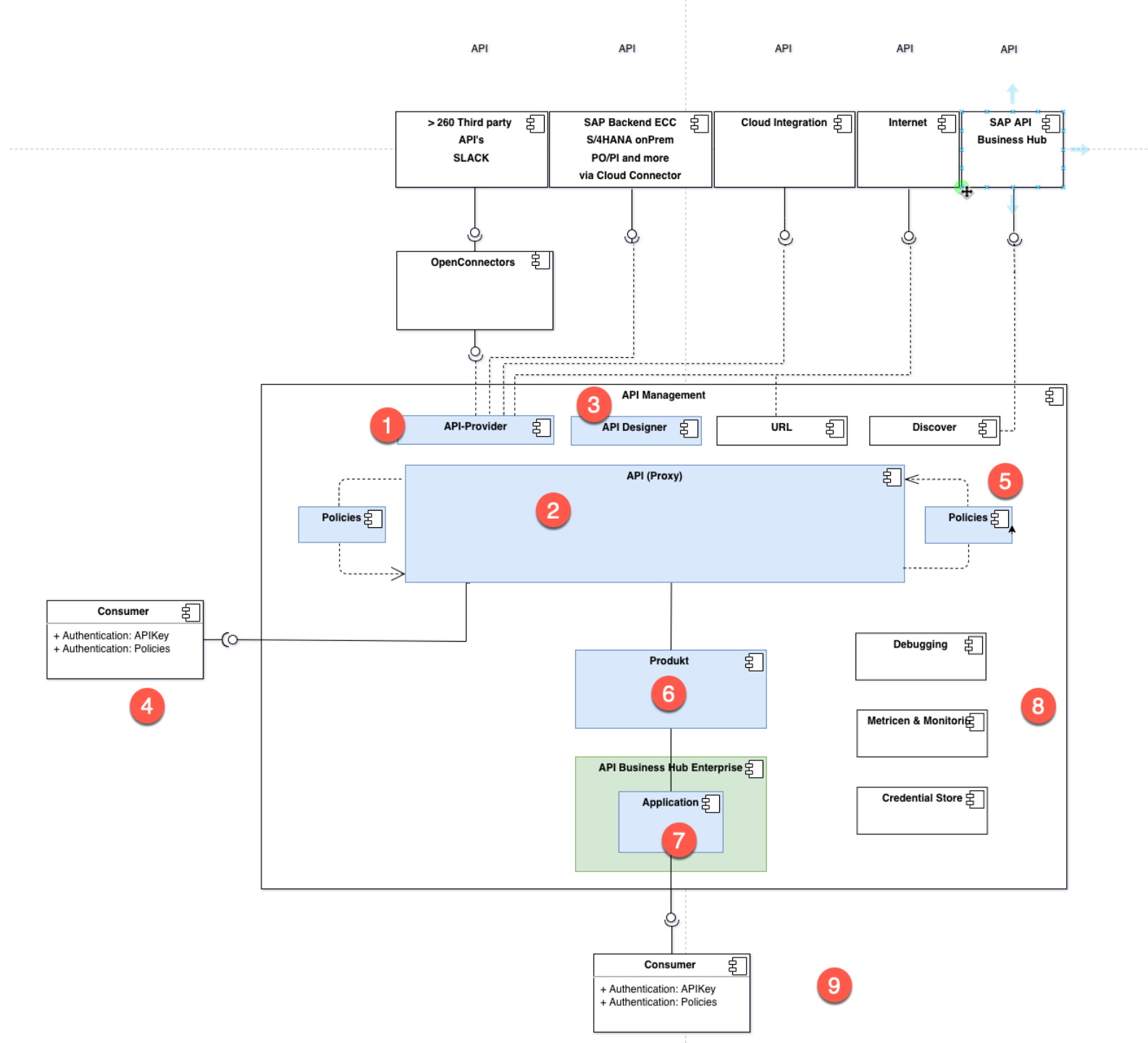
- Building APIs (proxies)
- Publishing APIs (Bundle APIs as Product)
- Analyzing APIs
- Consuming APIs
- Monetizing APIs
- Discover API Packages
- API (proxy) Designer

Relevant Use Cases



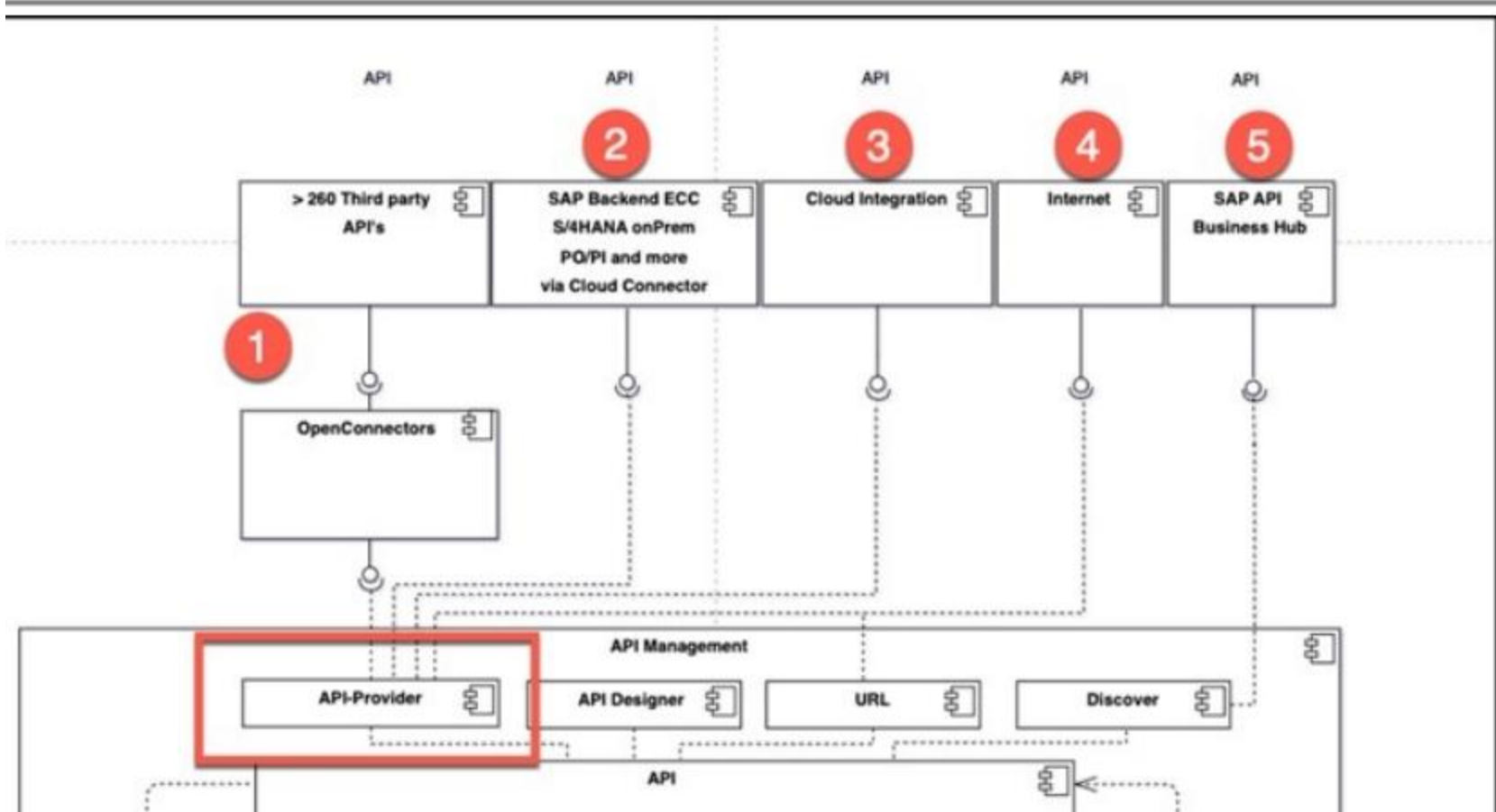
Components of SAP API Management

- API Provider
 - Concept in API Management that defines connection details for existing services
- API (Proxy)
 - Managed facades for existing services (sits in front of the existing service)
 - Applications connect to API (proxy)
- Policies
 - Provides capabilities to define behavior of an API (proxy)
- Product
 - Bundle and publish API (proxies) as a Product for consumption
- Application
 - Consumes the Product (bundle of API proxies) using api key and secret



Creating an API Provider

- Concept in SAP API Management
- Defines the connection details for services
 - Details of the host
 - Additional details to establish connection – for example, proxy settings



Demo: API Provider (5 different sources)

- Open Connectors
- Through Cloud Connector to SAP On-Premise backends
- Cloud Integration
- APIs from internet
- SAP Business Accelerator Hub (API Business Hub)

Overview **Connection** Catalog Service Settings

Type: * ⓘ

Internet

Internet

On Premise

Open Connectors

Cloud Integration

Use SSL: ☐

Demo: API Provider

Field Name	Input
Type	Internet
Host	sapes5.sapdevcenter.com
Port	443
Use SSL	Checked
Path Prefix	/sap/opu/odata
Service Collection URL	/IWFND/CATALOGSERVICE/ServiceCollection
Authentication Type	Basic
Username	<i>Credentials only used to create API Provider</i>
Password	<i>Not for the actual call of API</i>

Catalog Service

The catalog service provides a list of all available services for your area. Exploration of OData services is crucial for several tools to identify a suitable service for the realization of a business use case. Therefore certain search capabilities are required.

Metadata exploration is available using standard OData mechanisms. It is built on top of OData Channel to have full OData feature support when accessing the local database. Exposure of metadata uses search capabilities (scanning the English version of a description of a service), for example, search for all service documents where SalesOrder is used in the description.

Note

Exploration of the remote OData Channel's services and the registration of its services on SAP Gateway is also provided.

The **catalog service** retrieves a list of all available services on SAP Gateway. It is based on a catalog service pattern proposed by Microsoft™ and consists of an implementation approach of the catalog service pattern in the context of SAP Gateway.

Note

There are two versions of the catalog service available in SAP Gateway, Version 1 and Version 2. Version 2 has EntitySet collection, Tag collection, Vocabulary collection and Annotations. The open search functionality is also enhanced in Version 2. You can choose the version based on your requirement.

Creating an API (proxy)

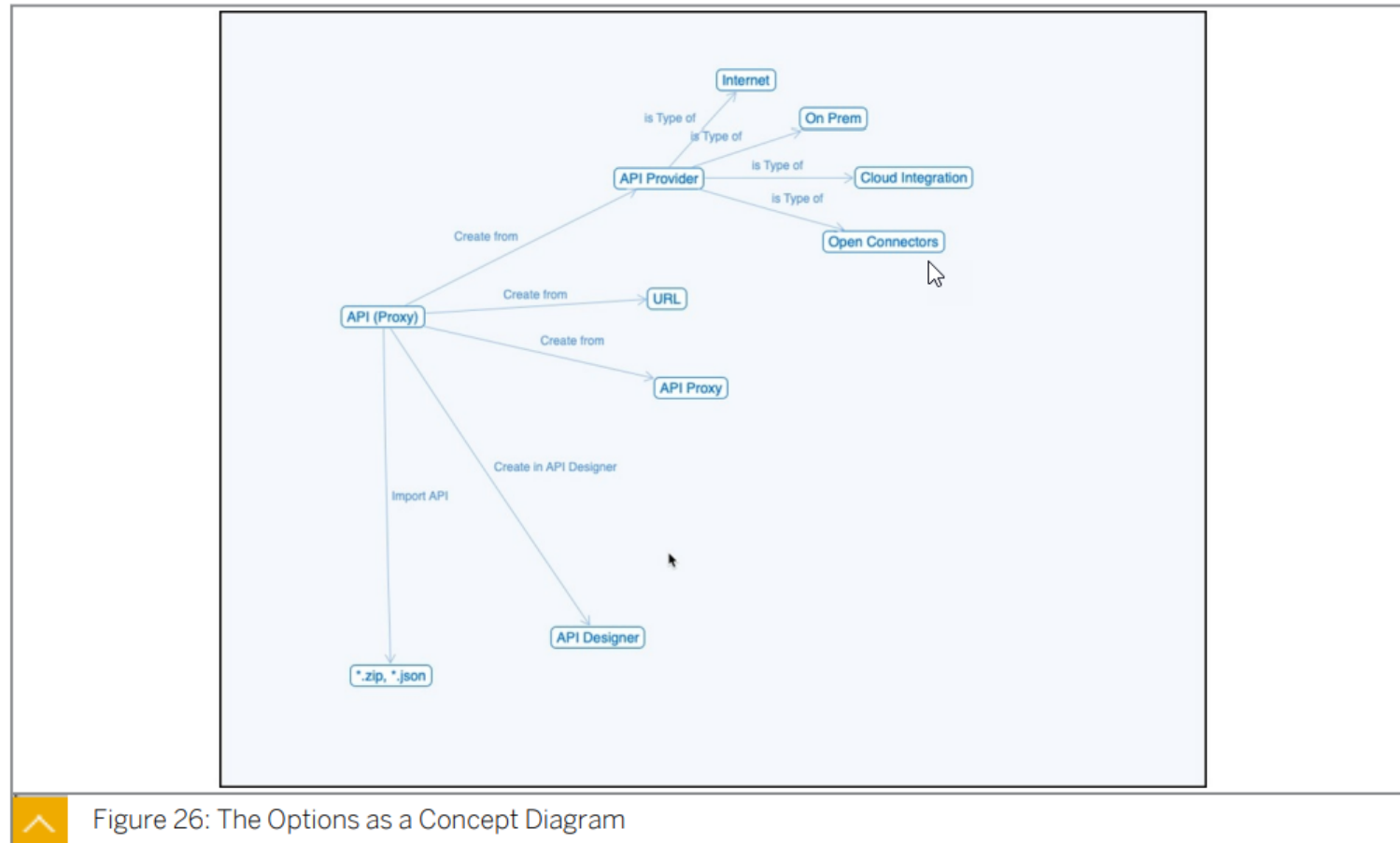


Figure 26: The Options as a Concept Diagram

Demo: API Proxy

- Create Button
 - API Provider
 - API Proxy (copy an existing proxy)
 - URL
- Import API
- Create in API Designer

Create APIs, Products, import Policy Templates and view Applications here.

Policy Templates (0)

4

Create in API Designer

Filter

[illegible]

Using Policies

- Policy is a program that executes a specific function at runtime
- Adds common functionality to API (proxy)
- Provides features to secure APIs, control API traffic etc.
- Also customize the behavior of API by adding scripts

Prebuilt policies

- Access Control
- Basic Authentication
- Extract Variables
- JavaScript
- OAuth v2.0
- Quota
- Verify API Key
- And so on...

SAP

Business Accelerator Hub

ExploreResourcesDiscover IntegrationsPartner with Us

APIs

1

Find APIs to integrate and extend.

Sort by: A-Z ▾

🔍 performance3 x

📄 ⭐

Policy Template

Performance_Traceability

This policy template assists in API Proxy Execution Performance assessment

4

Version 1

📄 ⭐

Policy Template

cacheMetadata

Improve performance of Odata API Proxies by caching metadata across invocations

Version 1

Overview

This policy template assists in API Proxy Execution Performance assessment

Version: 1

Last Modified: 07 Apr 2022

Type: Policy Template

Policies

proxy_request_recei...
ProxyEndPoint
PreFlow

proxy_processing_ti...
ProxyEndPoint
PostFlow

targetreceivinglatency
TargetEndPoint
PreFlow

target_processing_ti...
TargetEndPoint
PreFlow

Scripts

proxy_processing_time.js

proxy_request_receiving_latency.js

target_processing_time.js

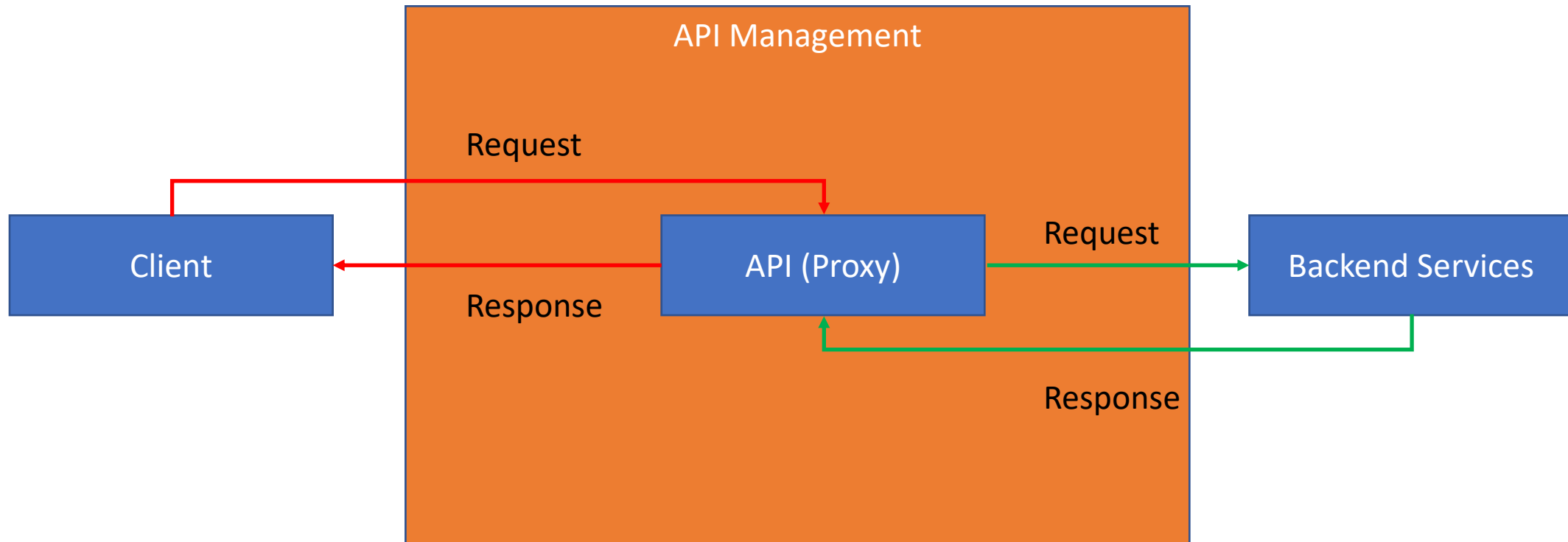
targetreceivinglatency.js

Flow Type:

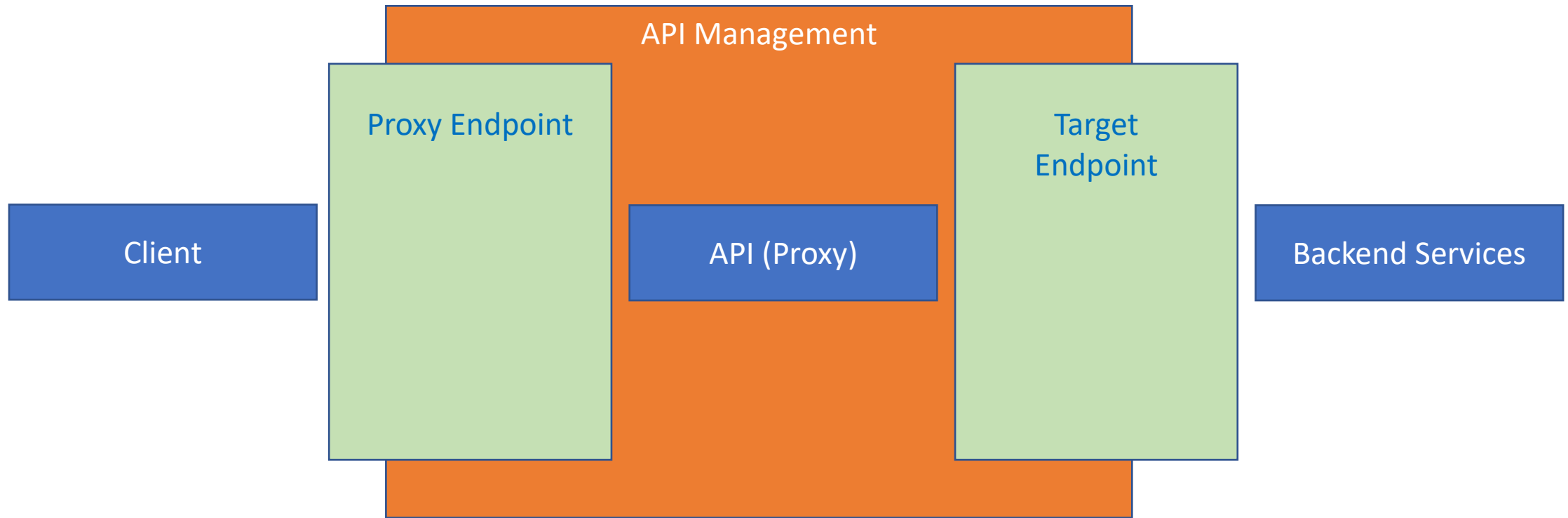
1

FEEDBACK

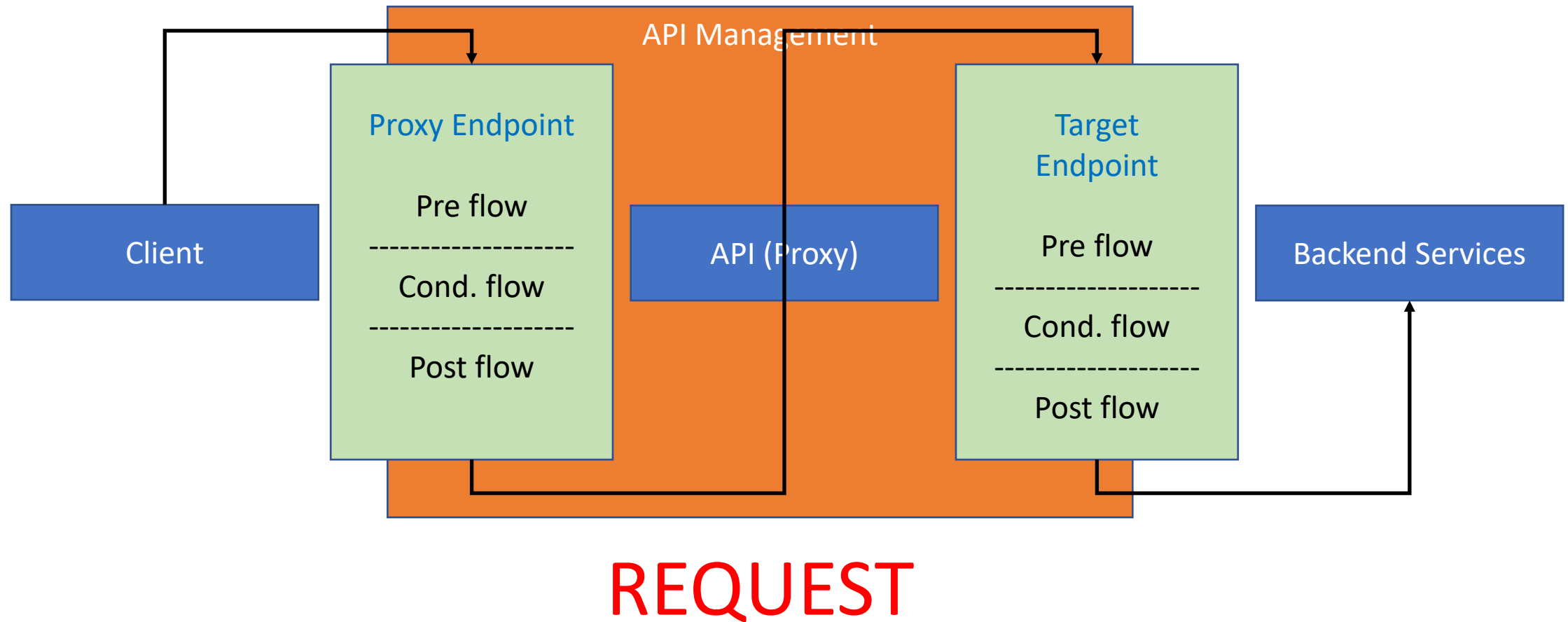
Flows – Where should I apply my policies ?



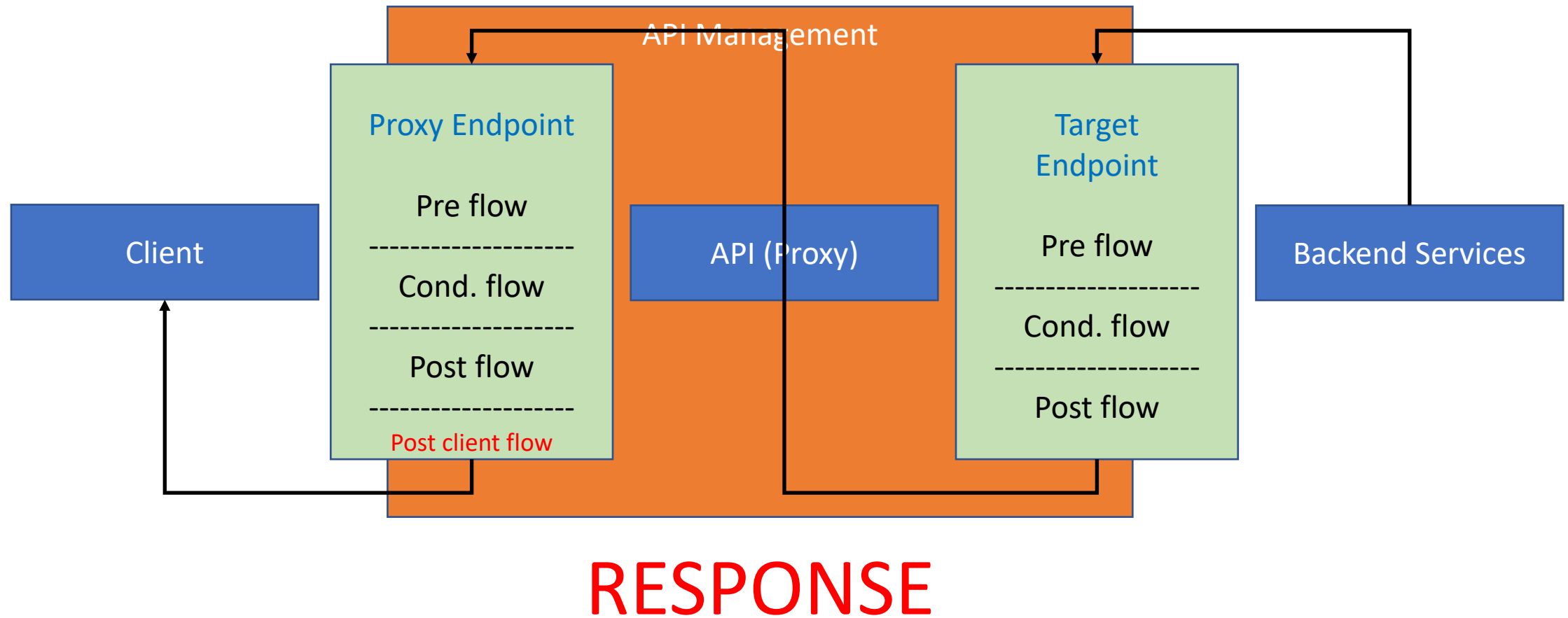
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Flows – Where should I apply my policies ?



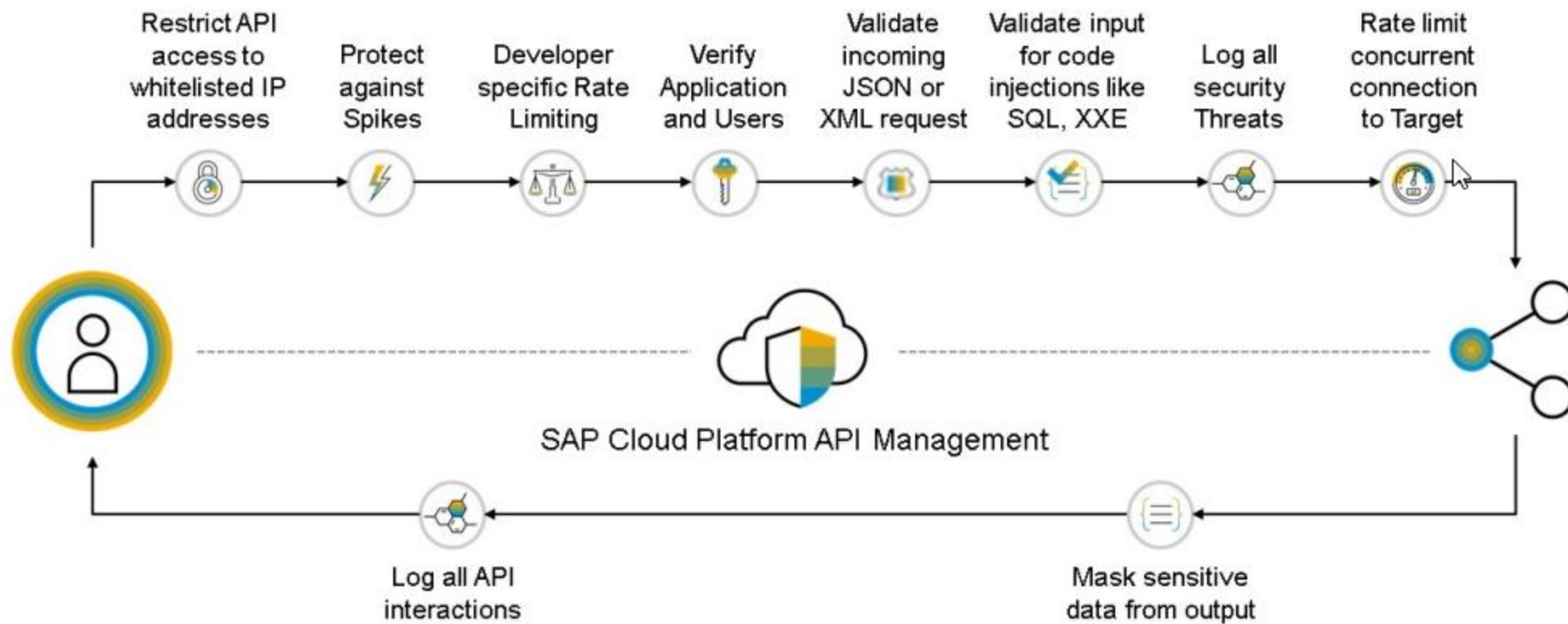


Figure 44: SAP Cloud Platform API Management

Demo: Policies for basic authentication


The screenshot displays the SAP Integration Suite API Portal interface. The top navigation bar includes the SAP logo, 'Integration Suite', 'API Portal', and a user profile icon. The main header shows 'API Artifacts for GWSAMPLE_BASIC_v1'. The 'Policy Editor' section is active, featuring a left sidebar with 'Flows' (ProxyEndpoint, TargetEndpoint), 'Created Policies', and 'Scripts'. The central canvas shows a flow diagram with a 'setCredentials' operation and a 'setBasicAuth' operation. The right sidebar lists 'Security Policies' (Basic Authentication, Decode/JWT, Generate/JWT, JSON Threat Protection, OAuth v2.0, OAuth v2.0 GET, OAuth v2.0 SET, Regular Expression Protection, SAML Assertion Generation, SAML Assertion Validation, Verify API Key, Verify/JWT, XML Threat Protection) and 'Traffic Management Policies' (Access Control, Concurrent Rate Limit, Invalidate Cache, Lookup Cache, Populate Cache). The 'Update' button is highlighted with a red box. Below the canvas, the XML policy code is visible:

```
1 <BasicAuthentication async="true" continueOnError="false" enabled="true" xmlns="http://www.sap.com/ospinget">
2   <!-- Operation can be Encode or Decode -->
3   <Operation>Encode</Operation>
4   <IgnoreUnresolvedVariables>true</IgnoreUnresolvedVariables>
5   <!-- for Encode, User element can be used to dynamically populate the user value -->
6   <User ref="request.header.username"></User>
7   <!-- for Encode, Password element can be used to dynamically populate the password value -->
8   <Password ref="request.header.password"></Password>
9   <!-- Source is used to retrieve the encoded value of username and password. This should not be used if the operation is
10  Encode-->
11  <Source>request.header.Authorization</Source>
12  <!-- Assign to is used to assign the encoded value of username and password to a variable. This should not be used if the
13  operation is Decode -->
14  <AssignTo createNew="false">request.header.Authorization</AssignTo>
15 </BasicAuthentication>
```



Demo: Policies for basic authentication

Field Name	Value
Policy Type	Assign Message
Policy Name	setCredentials
Endpoint Type	TargetEndpoint
Flow Type	Postflow
Stream	Incoming Request
Policy Type	Basic Authentication
Policy Name	setBasicAuthentication
Endpoint Type	TargetEndpoint
Flow Type	Postflow
Stream	Incoming Request

Editing APIs

 View API

TransportPoliciesCopyEdit ▾⋮

 GWSAMPLE_BASIC

Status: **Deployed**

API Proxy URL: https://quovadis.test.apimanagement.eu10.hana.ondemand.com:443/GWSAMPLE_BASIC

1

2

3

4

OverviewProxy EndPointTarget EndPointResources

Title:
GWSAMPLE_BASIC

Host Alias:
quovadis.test.apimanagement.eu10.hana.ondemand.com

API Base Path:
/GWSAMPLE_BASIC


API State:
Active

Description:

Calls(05/01/2023 - 05/29/2023)

3.5k

API Health




34870

Creating a Product

- Products are artifacts that appear in the SAP API Business Hub Enterprise Portal
- Role Collections
 - AuthGroup.API.Admin
 - AuthGroup.API.ApplicationDeveloper

Create APIs, Products, import Policy Templates and view Applications here.

APIs (4) **Products (1)** Applications (0) Policy Templates (1)

Name	Title	Status	Changed By
 PRODUCT_GWSAMPLE_BASIC	PRODUCT_GWSAMPLE_BASIC	Published	milton.chan

API Business Hub
Enterprise

The diagram illustrates the sequence of steps for SAP API Business Hub Enterprise. It consists of two rows of boxes. The top row contains three boxes: 'SAP API Business Hub' (with a logo of three circles), 'SAP BTP Cockpit' (with a blue square logo), and 'API Management Client SDK' (with a cube icon). A red circle with the number '4' is positioned to the right of these three boxes. The bottom row contains a single box labeled 'API Business Hub Enterprise' (with a code icon) and a red circle with the number '5' to its right. A dotted line connects the 'SAP API Business Hub' box to the 'API Business Hub Enterprise' box, indicating a flow or dependency.

API Business Hub Enterprise

Centralized API catalog to discover, consume and monitor APIs

Type here to search



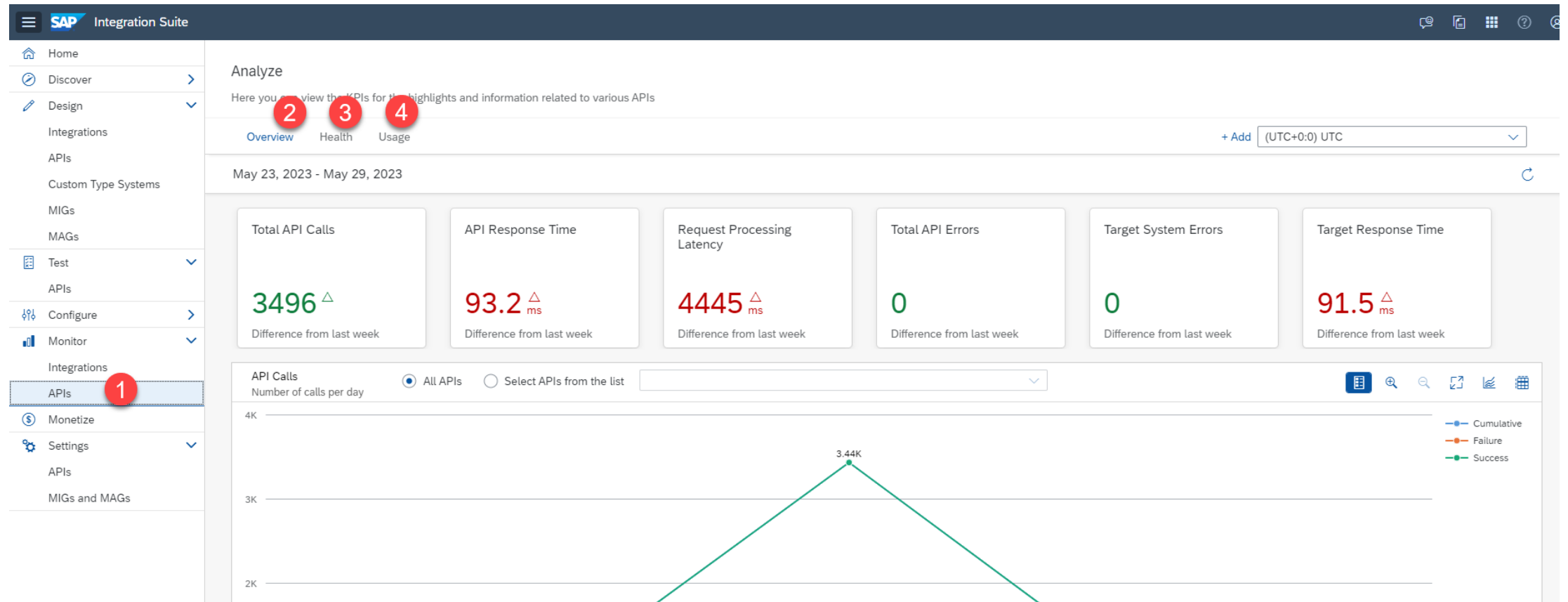
PRODUCT_GWSAMPLE_BASIC

API Based on the SAP Gateway Demo System (ES5). The authorization against the source interface is realized via policies. No...

Published on May 29 2023

1 API

Logging and Monitoring



Key Summary Points – Unit 3

Q10. What are the reasons for using policies in API management?

- ☒ Access Control
- ☐ B Identity Management
- ☐ C Data Management

☒ Correct

Correct. The reason for using policies in API management is Access Control.

Key Summary Points – Unit 3

Q8. Where can you download standardized, reusable policy templates?

- ☐ A SAP API Business Hub Enterprise
- ☐ B Enterprise Hub for APIs
- ☒ C SAP Business Accelerator Hub

☒ Correct

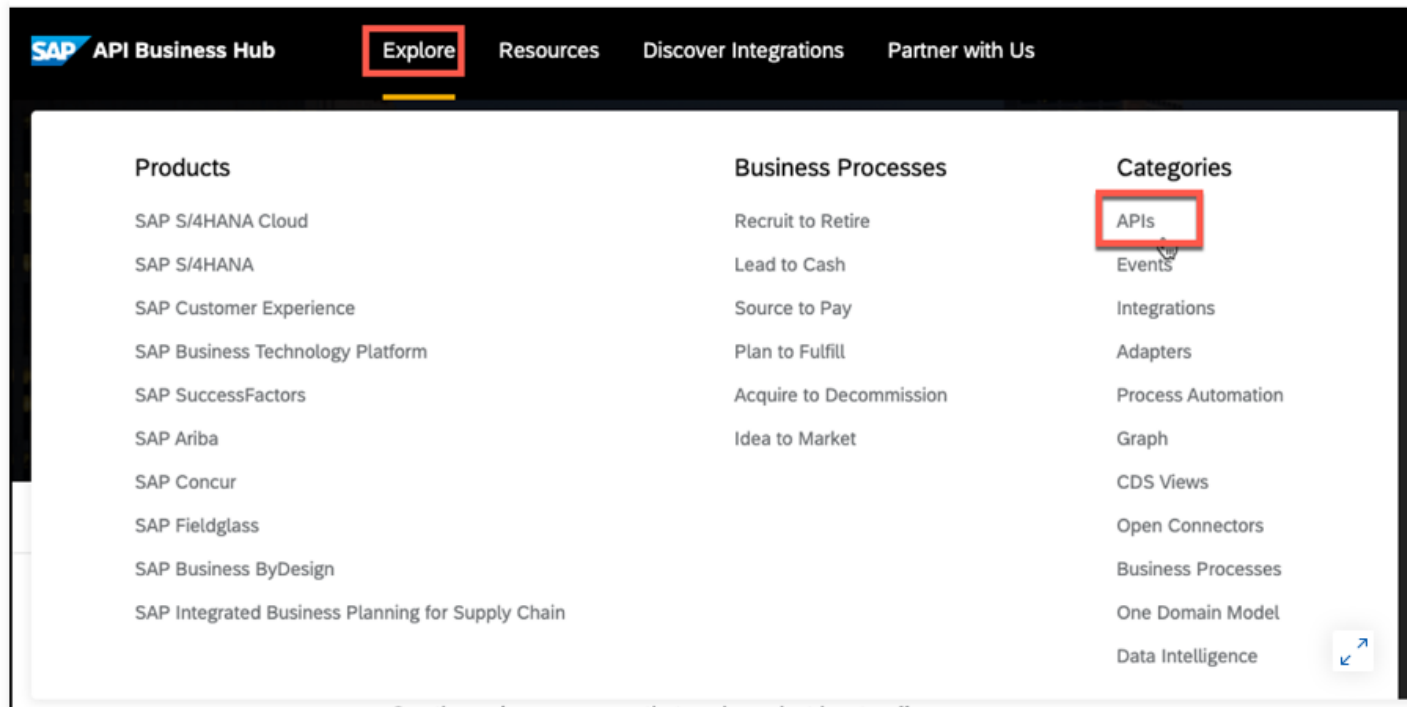
Incorrect. You can you download standardized, reusable policy templates from the SAP Business Accelerator Hub.

Key Summary Points – Unit 3

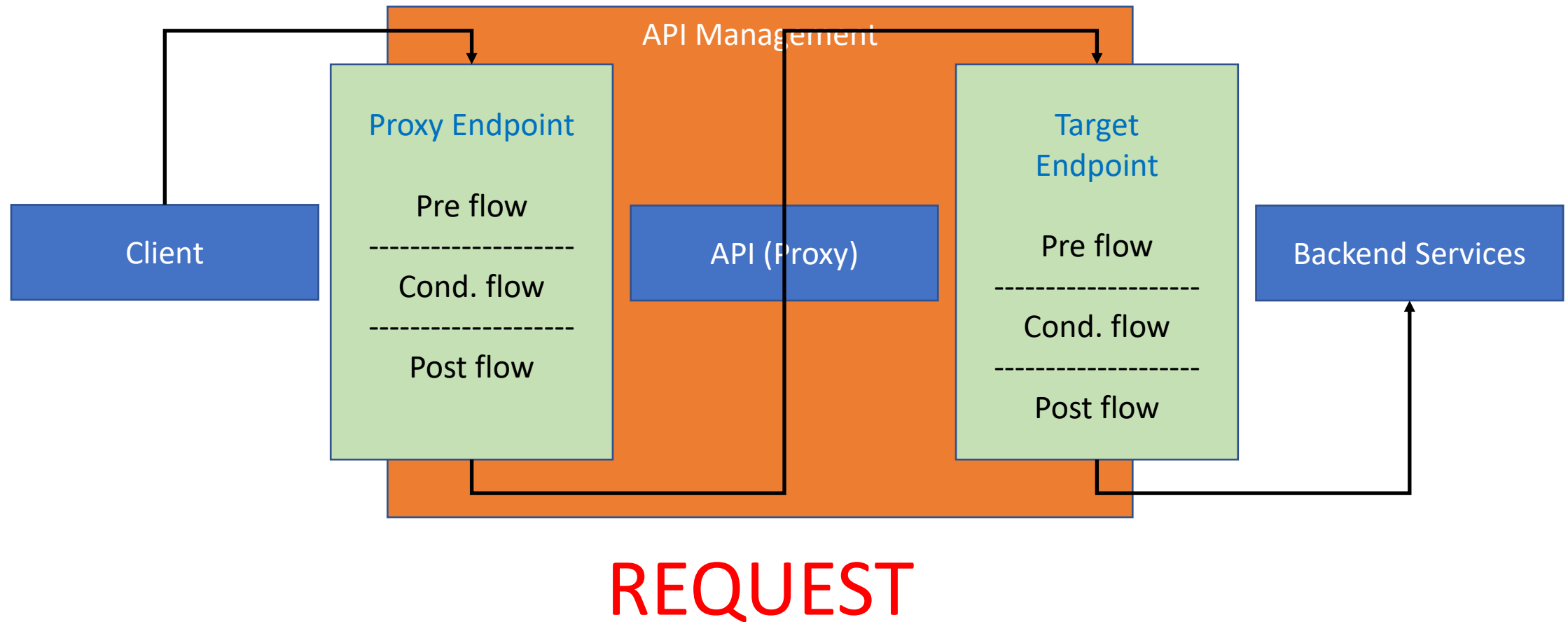
Use predefined policies

There are predefined sets of policies for specific applications. These can be found in the SAP Business Accelerator Hub.

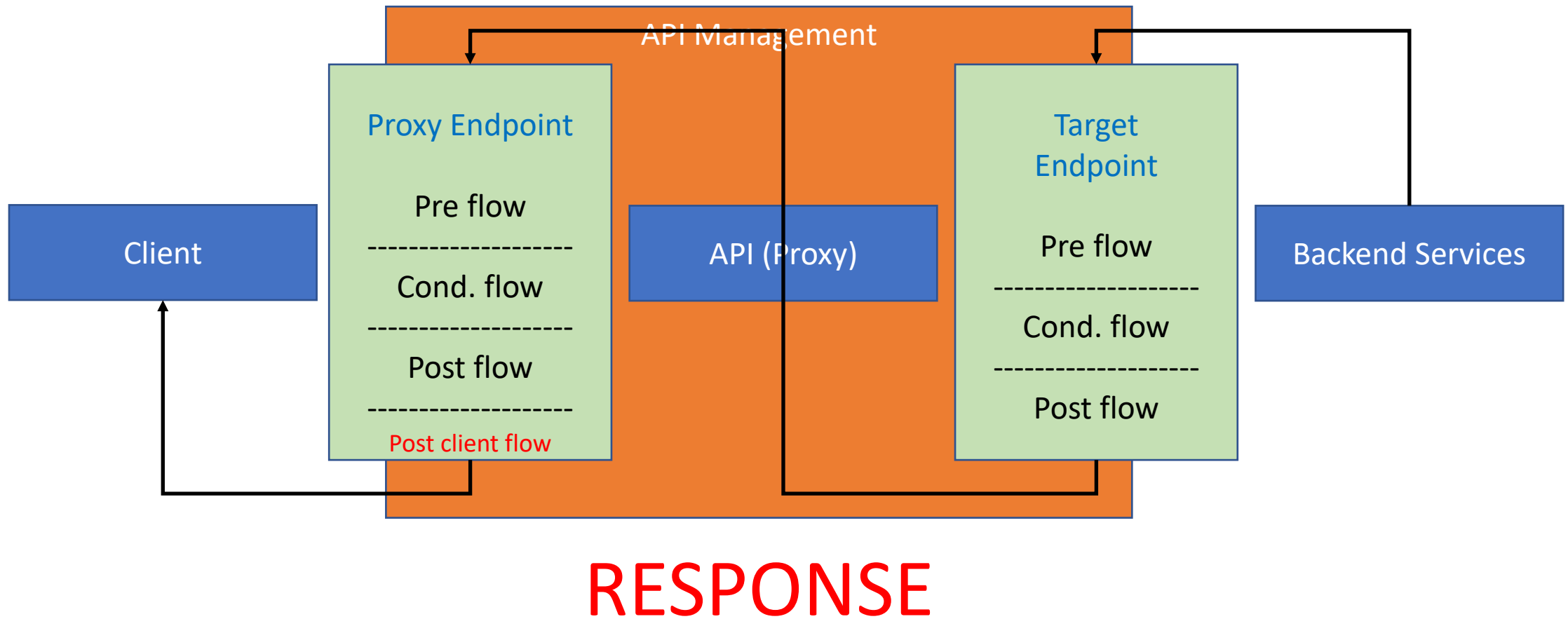
Navigate to <https://api.sap.com/> to Explore → APIs.



Flows – Where should I apply my policies ?



Flows – Where should I apply my policies ?



Key Summary Points – Unit 3

Q9. Which Role Collections do you need to use the API Business Hub Enterprise?

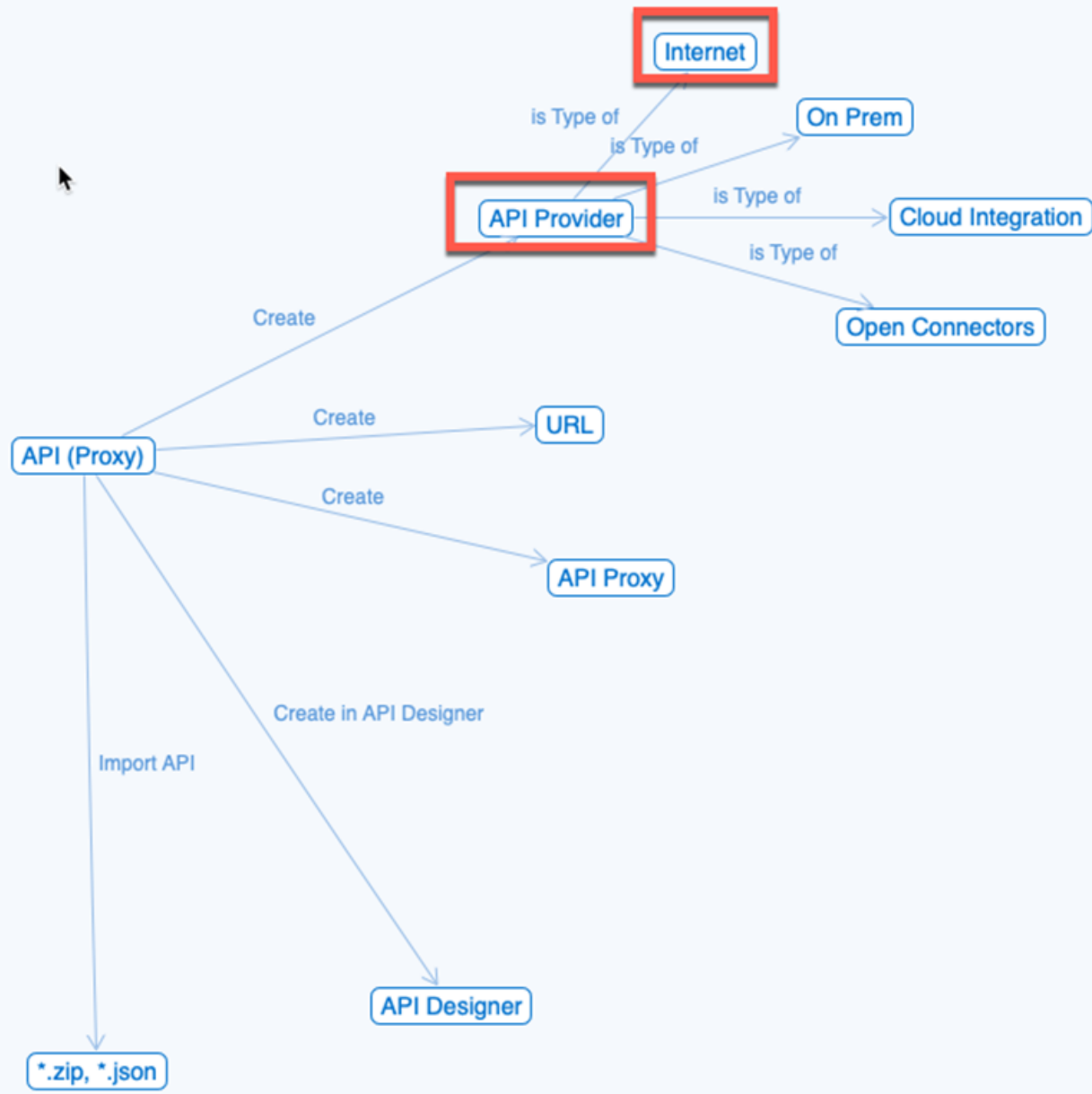
- ☐ A AuthGroupAPIADMINDesigner,AuthGroupAdministrator
- ☒ B AuthGroup.API.Admin, AuthGroup.API.ApplicationDeveloper
- ☐ C AuthgroupHeadofManager,AuthgroupChildhoodCaseManager

☒ Correct

Correct. To use the API Business Hub Enterprise you need the Role Collections AuthGroup.API.Admin, and AuthGroup.API.ApplicationDeveloper.

Components of SAP API Management

- API Provider
 - Concept in API Management that defines connection details for existing services
- API (Proxy)
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Demo: API Provider (5 different sources)

- Open Connectors
- Through Cloud Connector to SAP On-Premise backends
- Cloud Integration
- APIs from internet
- SAP Business Accelerator Hub (API Business Hub)

Overview **Connection** Catalog Service Settings

Type: * ⓘ

Internet

Internet

On Premise

Open Connectors

Cloud Integration

Use SSL: ☐

Overview **Connection** Catalog Service Settings

Type: * ⓘ

On Premise

Host: * ⓘ

Port: * ⓘ

Location ID: ⓘ

Authentication: ⓘ

None

Additional Properties: ⓘ

None

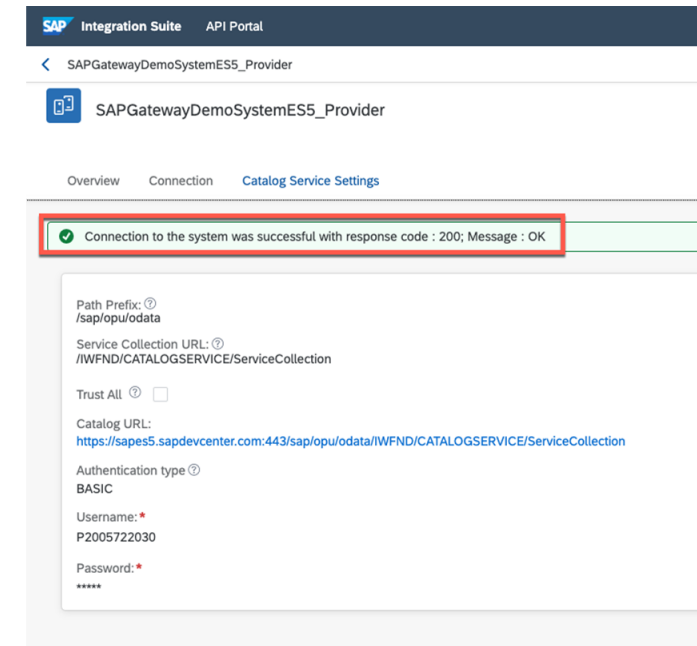
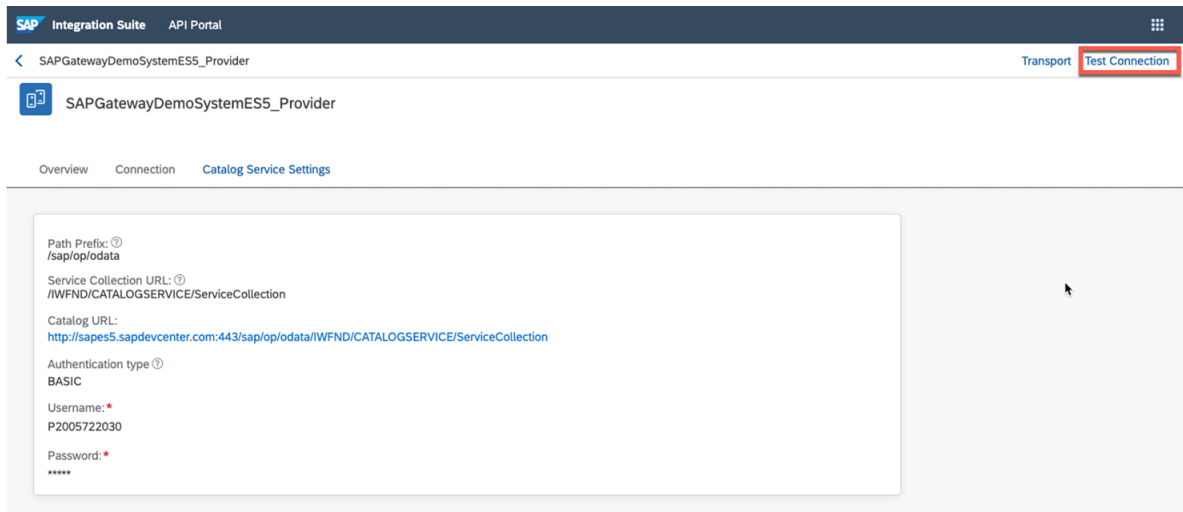
Demo: API Provider

Field Name	Input
Type	Internet
Host	sapes5.sapdevcenter.com
Port	443
Use SSL	Checked
Path Prefix	/sap/opu/odata
Service Collection URL	/IWFND/CATALOGSERVICE/ServiceCollection
Authentication Type	Basic
Username	<i>Credentials only used to create API Provider</i>
Password	<i>Not for the actual call of API</i>

Key Summary Points – Unit 3

Summary

An API provider encapsulates access to APIs from various sources. More than 260 third-party REST-based APIs are connected through the Open Connector. SAP backend systems such as SAP S/4HANA On-Prem or ECC/PI/PO can be connected through the Cloud Connector. SOAP APIs can also be made available through the Cloud Integration. Ultimately, almost all APIs can be connected. The procedure for connecting a foreign API is wizard-controlled.



Key Summary Points – Unit 3

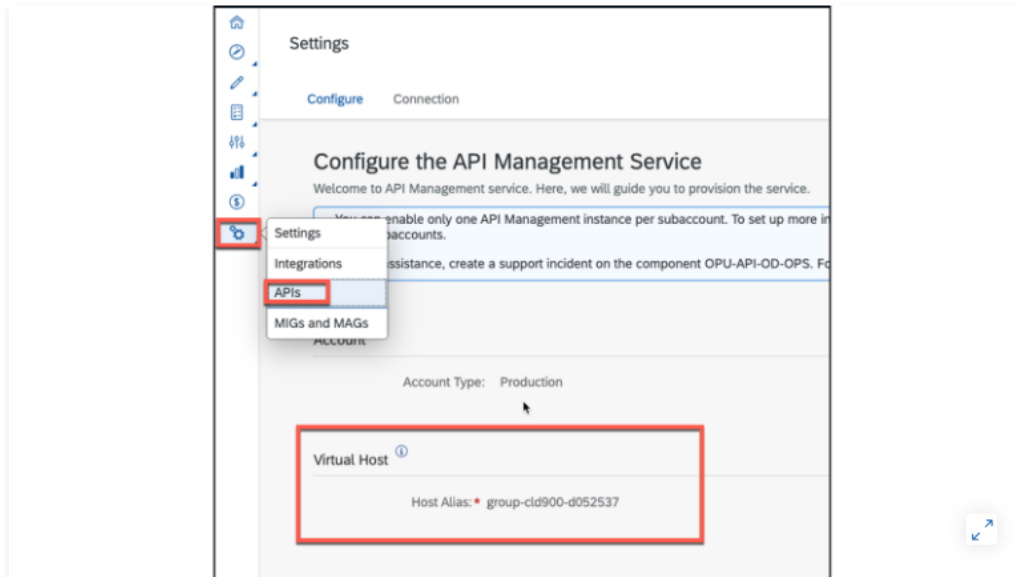
API URL - Proxy URL (No. 1)

At No. 1, you can see the new URL (proxy URL) with which you can now call the original source API. The *URL* consists of the following elements:

- API URL: https://group-cld900-d052537.prod01.apimanagement.eu10.hana.ondemand.com:443/GWSAMPLE_BASIC [↗](#)
- Application protocol: https
- Virtual Host: group-cld900-d052537
- API Host: prod01.apimanagement.eu10.hana.ondemand.com
- API Port: 443
- API Name: GWSAMPLE_BASIC

Virtual Host

The virtual host was created during the provisioning of API management and can be changed at any time using *Settings* → *APIs*.



Key Summary Points – Unit 3

Create API

Select: ☒ API Provider ☐ API Proxy ☐ URL

API Provider: * SAPGatewayDemoSystemES5_Provider Discover ☒ Link API Provider ?

URL * ? /sap/opu/odata/iwbep/GWDEMO

API Details

Name: * GWDEMO

Title: * GWDEMO

API State: * Active

Host Alias: * ? group-cld900-d052537.prod01.apimanagement.eu10.hana.ondemand.com

API Base Pa... * ? /GWDEMO

Version:

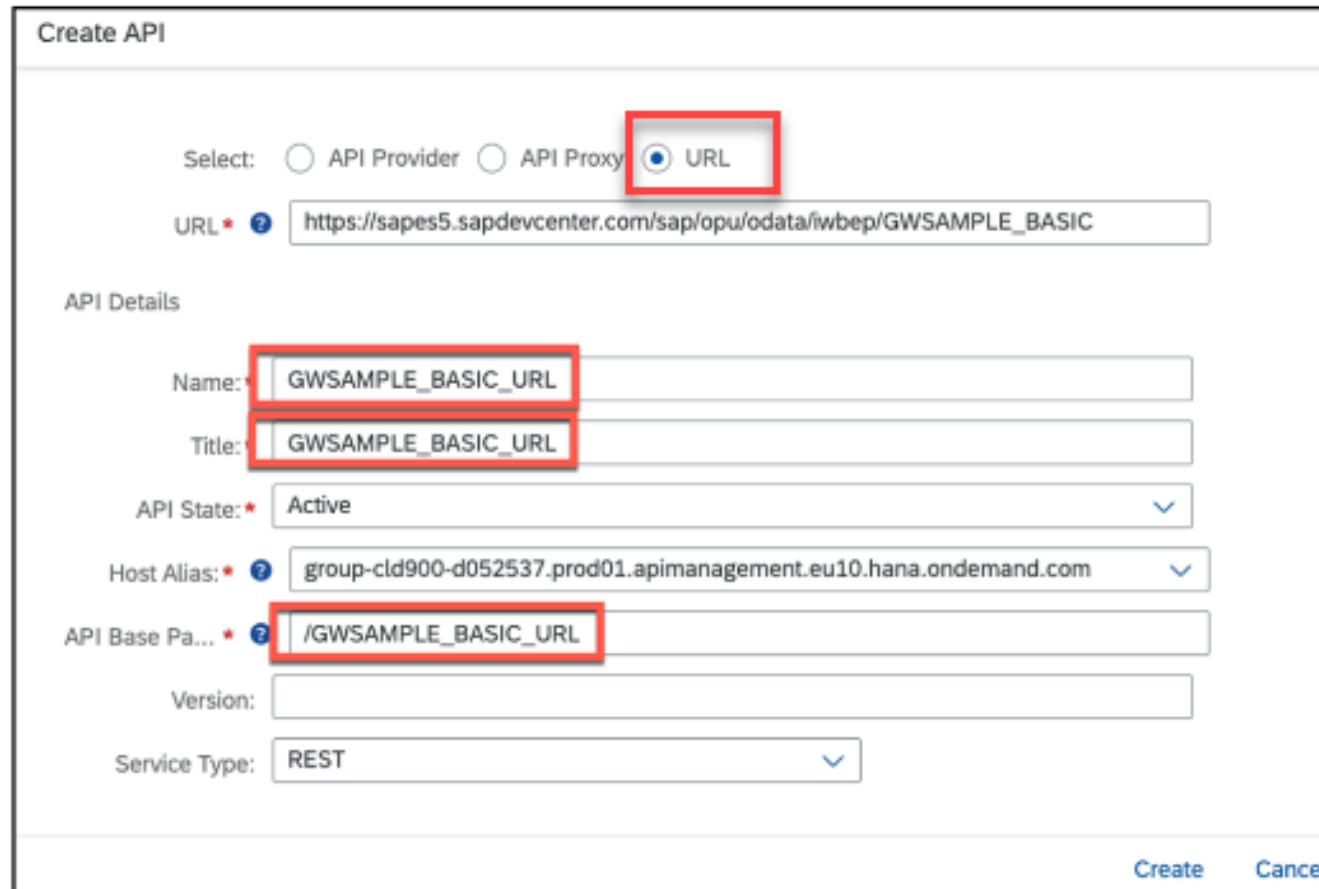
Service Type: ODATA Documentation ? YES

Create Cancel

When you finish creating this API (Proxy), it has to be deployed so that it can be used. After that, the API (proxy) is ready for testing. The *service type* is automatically defined. In this case, it is OData.

Key Summary Points – Unit 3

In this case, you must enter the data manually (marked). The *Service Type* can only be *REST* or *SOAP*.




The screenshot shows the 'Create API' form with the following fields and values:


- Select:** ☒ API Provider ☐ API Proxy ☒ URL (The 'URL' radio button is highlighted with a red box).
- URL:** (The entire field is highlighted with a red box).
- API Details:**
 - Name:** (The entire field is highlighted with a red box).
 - Title:** (The entire field is highlighted with a red box).
 - API State:** (The entire field is highlighted with a red box).
 - Host Alias:** (The entire field is highlighted with a red box).
 - API Base Pa...:** (The entire field is highlighted with a red box).
 - Version:** (The entire field is highlighted with a red box).
 - Service Type:** (The entire field is highlighted with a red box).

At the bottom right, there are 'Create' and 'Cancel' buttons.

Editing APIs

 View API

TransportPoliciesCopyEdit ▾⋮

 GWSAMPLE_BASIC

Status: **Deployed**

API Proxy URL: https://quovadis.test.apimanagement.eu10.hana.ondemand.com:443/GWSAMPLE_BASIC

1

2

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OverviewProxy EndPointTarget EndPointResources

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quovadis.test.apimanagement.eu10.hana.ondemand.com

API Base Path:
/GWSAMPLE_BASIC


API State:
Active

Description:

Calls(05/01/2023 - 05/29/2023)

3.5k

API Health

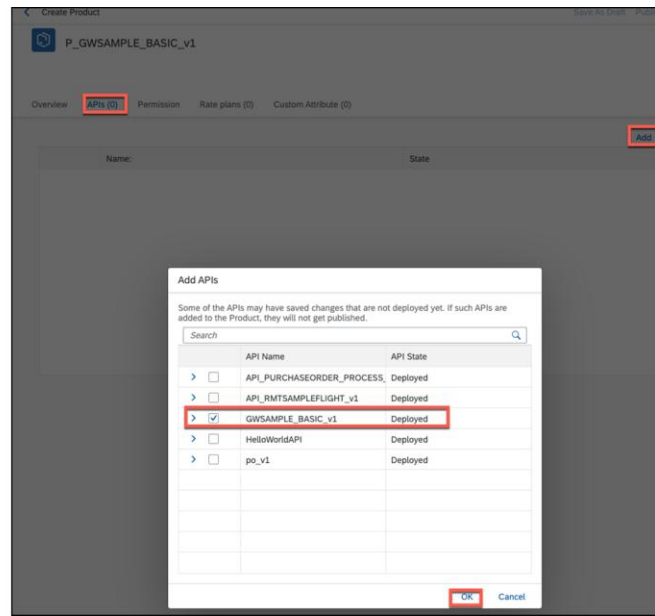
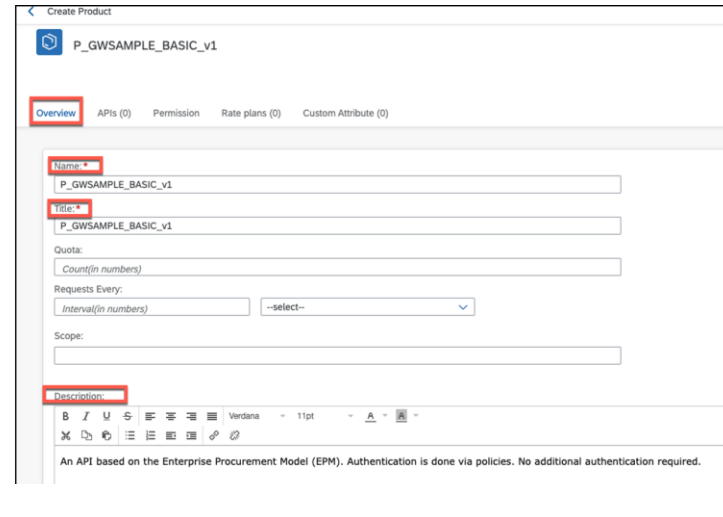
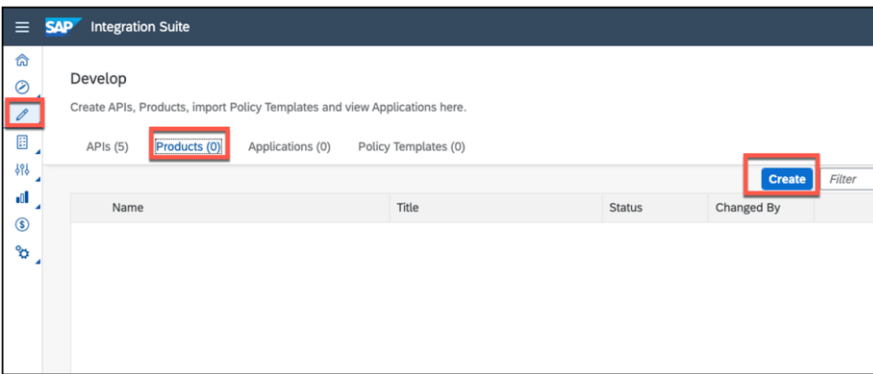


3487 0

Creating a Product

- Products are artifacts that appear in the SAP API Business Hub Enterprise Portal
- Bundle and publish one or more API (proxies) as a Product for consumption
- Role Collections
 - AuthGroup.API.Admin
 - AuthGroup.API.ApplicationDeveloper

Key Summary Points – Unit 3



Key Summary Points – Unit 3

- API Designer
 - Visualization of openAPI specification is done using swagger UI
 - Swagger UI is an open source JavaScript framework to make APIs tangible

The screenshot displays the Swagger API Designer interface. On the left, the 'Swagger OAS' configuration is shown with a dropdown menu for 'pet' and a 'POST /pet' endpoint. A red circle with the number '5' is positioned below the endpoint. On the right, the OpenAPI specification code is displayed, with red circles numbered 1 through 4 highlighting specific sections: 1. 'openapi: 3.0.1', 2. 'info: title: Swagger OAS', 3. 'servers: - url: http://petstore.swagger.io/v212', and 4. 'paths: /pet: post: tags: - pet'. The code also includes a 'summary: Add a new pet to the store' and a 'requestBody' section.

```
1 openapi: 3.0.1
2 info:
3   title: Swagger OAS
4   description: This is a sample server Petstore server
5   version: 1.0.0
6 servers:
7   - url: 'http://petstore.swagger.io/v212'
8 paths:
9   /pet:
10    post:
11      tags:
12        - pet
13      summary: Add a new pet to the store
14      operationId: addPet
15      requestBody:
16        description: Pet object that needs to be added to the store
17        content:
18          application/json: {}
19          application/xml: {}
20        required: true
21
```