



SAP CodeJam Barcelona

Nov 23 2023

Managing APIs in your landscape with SAP API Management

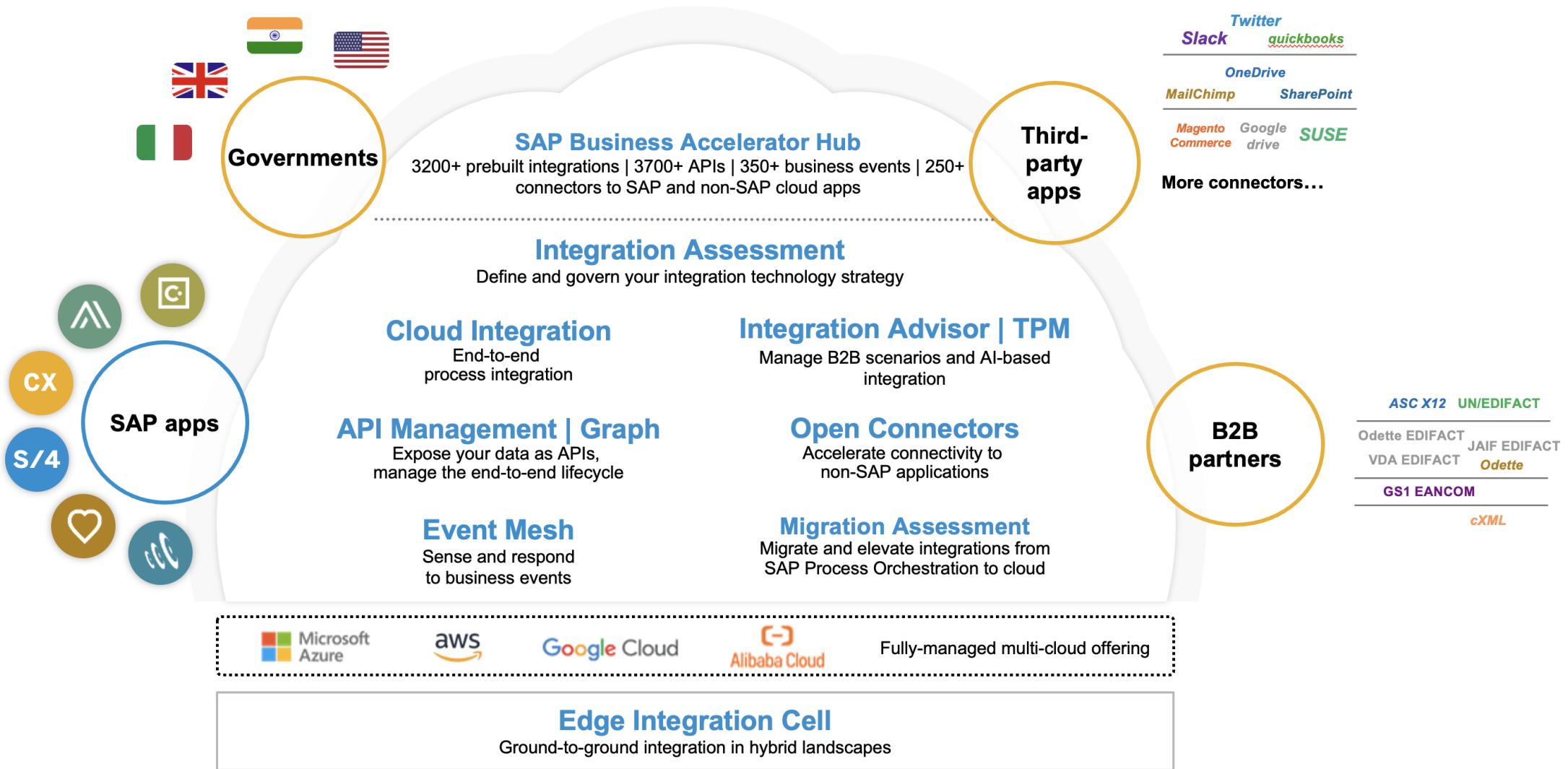


SAP Community
Anniversary

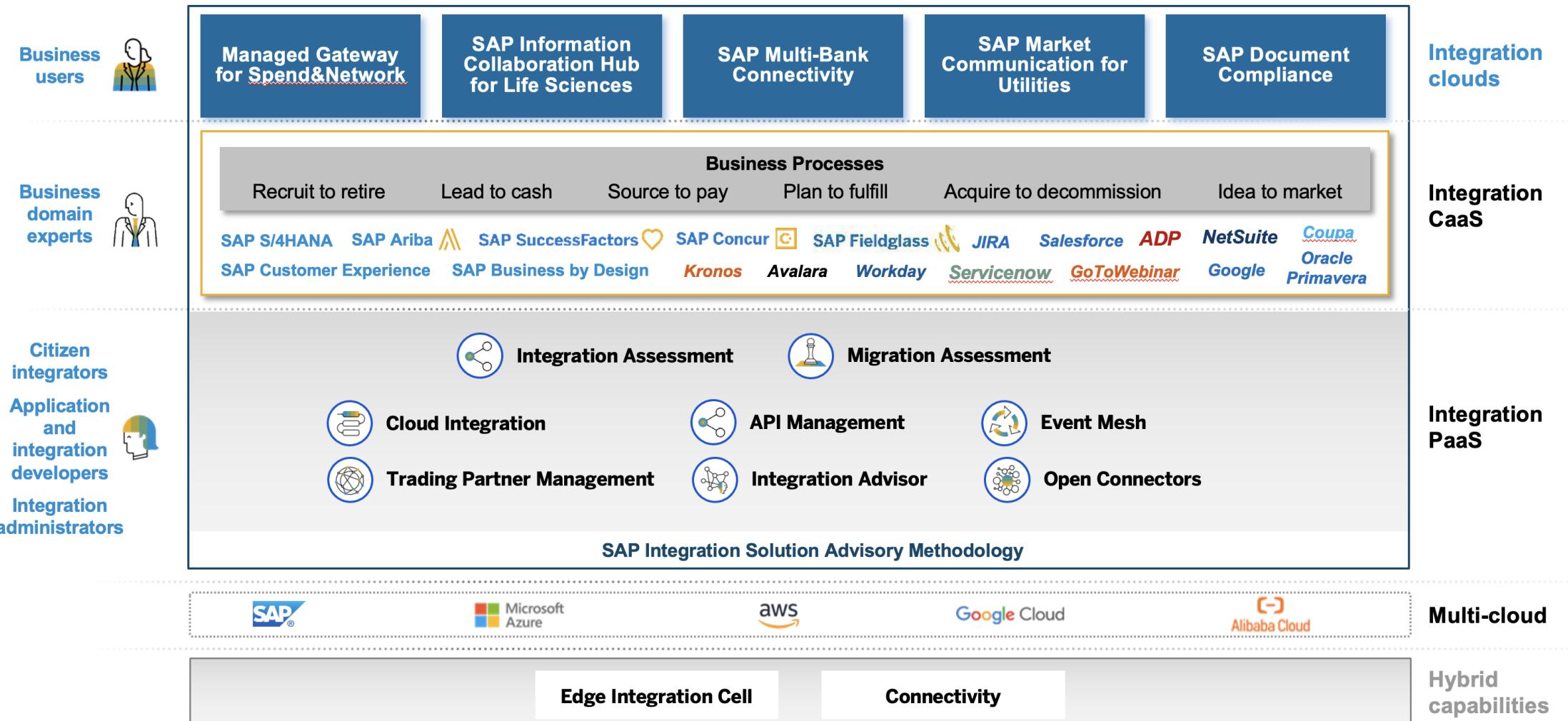
SAP CodeJam - Agenda

- 14:00 - Introduction
- 14:20 - Exercise 01 - 07
- 16:00 - Break
- 16:20 - Exercise 08 - 13

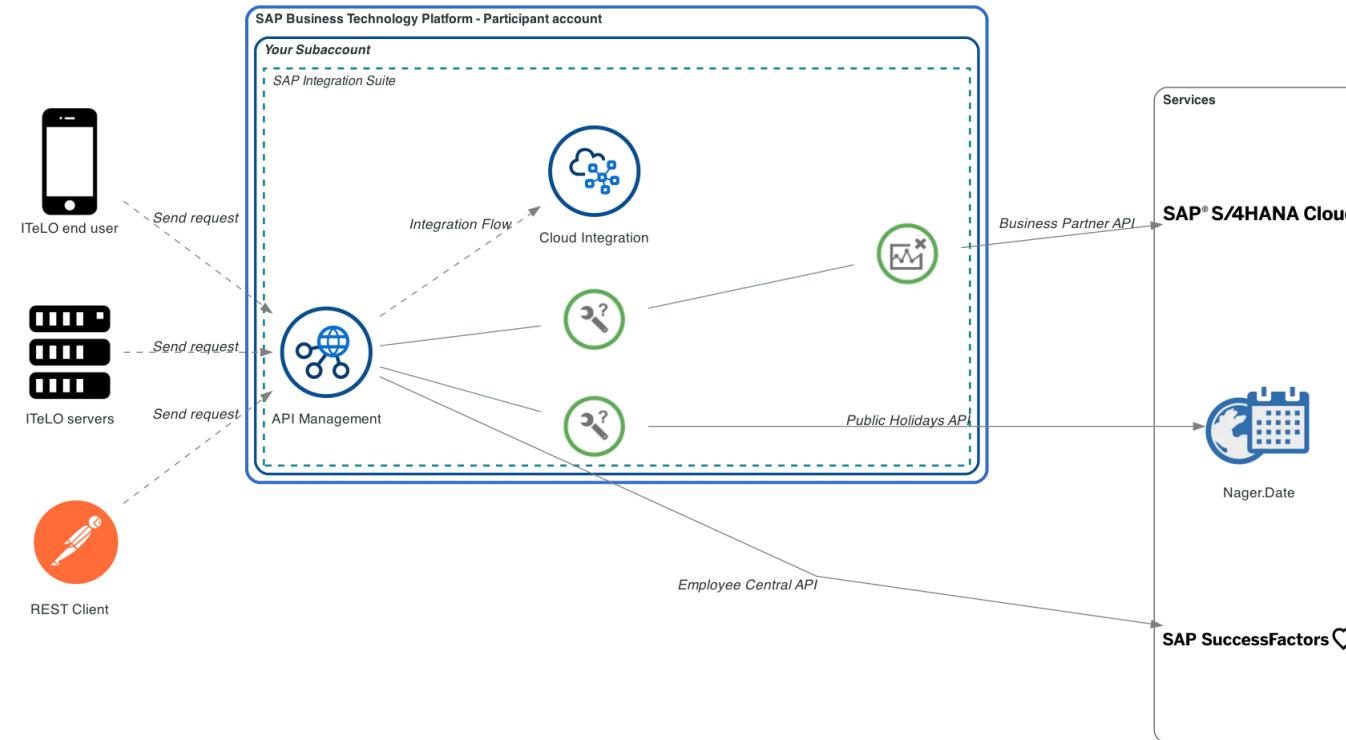
SAP Integration Suite



SAP Integration Suite



SAP CodeJam - API Management scenario



SAP CodeJam - Repository

The screenshot shows a GitHub repository page for **SAP-samples / manage-apis-codejam**. The repository is public and was generated from [SAP-samples/repository-template](#). The main interface includes a search bar, navigation links for Pull requests, Issues, Codespaces, Marketplace, and Explore, and user profile icons. Below the header, there are buttons for Edit Pins, Unwatch (5), Fork (0), and Star (3). The navigation bar at the top of the page has tabs for Code (selected), Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, and Settings.

Code Overview:

- Branch: main
- Commits: 85
- Last commit: f95ee30 last week
- Files modified: 1 branch, 0 tags

Commit History:

Author	Message	Date	
ajmaradiaga	Fixed links to other exercises	f95ee30 last week	
	.github	Including SAP API Management in questions	last month
	.reuse	Initial commit	4 months ago
	.sap/website	Including files to generate a static website	3 weeks ago
	LICENSES	Initial commit	4 months ago
	assets	Fixed formatting	last week
	exercises	Fixed links to other exercises	last week
	.gitignore	Including jekyll generate static website files	3 weeks ago
	LICENSE	Initial commit	4 months ago
	README.md	Generating diagrams and including them in exercises	last week
	prerequisites.md	Including info on registering as a developer	3 weeks ago
	slides.md	Rename API Business to Business Accelerator Hub	last month
	troubleshooting.md	Including details on registering user	3 weeks ago

About:

In this SAP CodeJam, we will look at SAP API Management part of the SAP Integration Suite and how we can use it to manage the different APIs exposed by our systems and services.

Tags: api, sample, codejam, sap-btp, integration-suite

Links: Readme, Apache-2.0 license, Code of conduct, Security policy, Activity, 3 stars, 5 watching, 0 forks, Report repository

SAP CodeJam - Exercises (Part 1)

- Exercise 01 - The OpenAPI specification (10')
- Exercise 02 - Getting familiar with the SAP Business Accelerator Hub (20')
- Exercise 03 - Discover and import an API (15')
- Exercise 04 - Deploy an API (15')
- Exercise 05 - Testing an API using the API Test Console (15')
- Exercise 06 - Publishing our API (20')
- Exercise 07 - Import an API using an OpenAPI specification (15')

SAP CodeJam - Exercises (Part 2)

- Exercise 08 - Add an SAP SuccessFactors Employee Central API (15')
- Exercise 09 - Monitoring APIs (15')
- Exercise 10 - API policies (20')
- Exercise 11 - Consume protected APIs by creating an application (15')
- Exercise 12 - Protecting our APIs (20')
- Exercise 13 - Editing API paths, operations, and documentation (15')

SAP CodeJam - Exercises (Optional)

- Optional Exercise 01 - Expose integration flow via API Management
- Optional Exercise 02 - API Security Best Practices
- Optional Exercise 03 - API Providers



URL: <http://bit.ly/apim-madrid-june-2023>

Password: *Outlook-Word-Excel-8*

Exercise 01 - OpenAPI specification (10')



Exercise 02 - Getting familiar with the SAP Business Accelerator Hub (20')

The screenshot shows the SAP API Business Hub interface. At the top, there is a navigation bar with links for Explore, Resources, Discover Integrations, and Partner with Us. A toggle switch for "New SAP API Business Hub" is on, along with icons for bookmarking, sharing, search, and help. Below the navigation is a banner for "SAP S/4HANA Cloud" with a subtitle: "The next generation digital core designed to help you run simple in a digital economy. It provides the industry-specific capabilities and cloud benefits that your business needs." The main content area has tabs for Overview, APIs (which is selected and highlighted with an orange box), Events, CDS Views, Developer Extensibility, Integrations, Business Process, and Workflow Management. Under the APIs tab, there are sub-tabs for Packages (selected and highlighted with an orange box), All (also highlighted with an orange box), SOAP, ODATA V2, ODATA V4, and REST. Below these tabs, it says "Showing 1 of 4 results". On the left, there is a search bar containing "Business Partner" (also highlighted with an orange box). To the right of the search bar is a "View All Results" link, page navigation (Page 1 of 4), and a "Sort by: A-Z" dropdown. There are three API cards displayed:

- Business Partner (A2X)** (Version 1.2.1): An ODATA V2 API for creating, reading, updating, or deleting master data for business partners.
- Contract Accounting Business Partner Payment – Manage** (Version 2.0.0): An ODATA V4 API for managing payments in Contract Accounting (FI-CA).
- Contract Accounting Business Partner Payment – Manage** (Version 1.1.0): Another ODATA V4 API for managing payments in Contract Accounting (FI-CA).

A blue "FEEDBACK" button is located on the right side of the page.

Exercise 03 - Discover and import an API (15')

The screenshot shows the SAP Integration Suite interface. The top navigation bar includes the SAP logo, 'Integration Suite', and various icons for search, help, and notifications (81). The main area features a large blue banner with the text 'Welcome to SAP Integration Suite' and 'Simplify and accelerate enterprise integration'. To the right of the banner is a cartoon illustration of two people working with data on screens. On the left, a vertical sidebar contains icons for Home, Overview, Create, Search, Data, and Settings. Below this is a 'Recent' section with the instruction 'View recently accessed artifacts.' A card for 'HelloWorldAPI' is shown under the 'APIs' heading, categorized as 'REST | 1' and 'Deployed'. In the 'Monitoring' section, there are two cards: 'Integration - Deployment Status' (Based on message processing artifacts) showing 0 total and 0 started/starting; and 'API Traffic' (Based on API Calls) showing 0 total calls with a chart where 1.5 calls were successful and 0 failed. A time filter at the top of the monitoring section allows switching between Hour, Day, Week, and Month.

Exercise 04 - Deploy an API (15')

The screenshot shows the SAP Integration Suite interface with the title "S4HC_API_BUSINESS_PARTNER". The status is "Not Deployed" and the API Proxy URL is https://dev-advocates-ajmc.test.apimanagement.eu10.hana.ondemand.com:443/API_BUSINESS_PARTNER. The "Overview" tab is selected, displaying details about the API:

- Title:** Business Partner (A2X)
- Host Alias:** dev-advocates-ajmc.test.apimanagement.eu10.hana.ondemand.com
- API Base Path:** /API_BUSINESS_PARTNER
- API State:** Active
- Description:** This service enables you to create, display, update, and delete data related to Business Partner, Supplier, and Customer with the data provided in a payload, in an API call. This service also supports create deep entity operation and batch processing.

On the right side, there are several cards:

- Calls(05/01/2023 - 05/16/2023)**: 4 calls
- API Health**: A progress bar showing 3 green segments and 1 red segment.
- Key Value Map Associated (0)**: No data
- Created On:** 16/05/2023, 09:49:26 **Created By:** antonio.maradiaga@sap.com
- Changed On:** 16/05/2023, 12:51:07 **Changed By:** antonio.maradiaga@sap.com

Exercise 05 - Testing an API using the API Test Console (15')

The screenshot shows the SAP Integration Suite API Test Console. The top navigation bar includes the SAP logo and the title "Integration Suite". The left sidebar has a vertical menu with icons for Home, Overview, Create, Artifacts, Catalog, Data, and Settings.

The main area features a large blue banner with the text "Welcome to SAP Integration Suite" and "Simplify and accelerate enterprise integration". To the right of the banner is a cartoon illustration of two people working with data on a screen.

Below the banner, the "Recent" section displays two recently accessed artifacts:

API	Status
S4HC_API_BUSINESS_PARTNER ODATA 1.3.0	Deployed
HelloWorldAPI REST 1	Deployed

The "Monitoring" section provides performance metrics:

Metric	Value	Unit
Total	0	
Started	0	
Starting	0	
Stopping	0	

Metric	Value	Unit
Total Calls	4	
Success	3	
Failed	1	

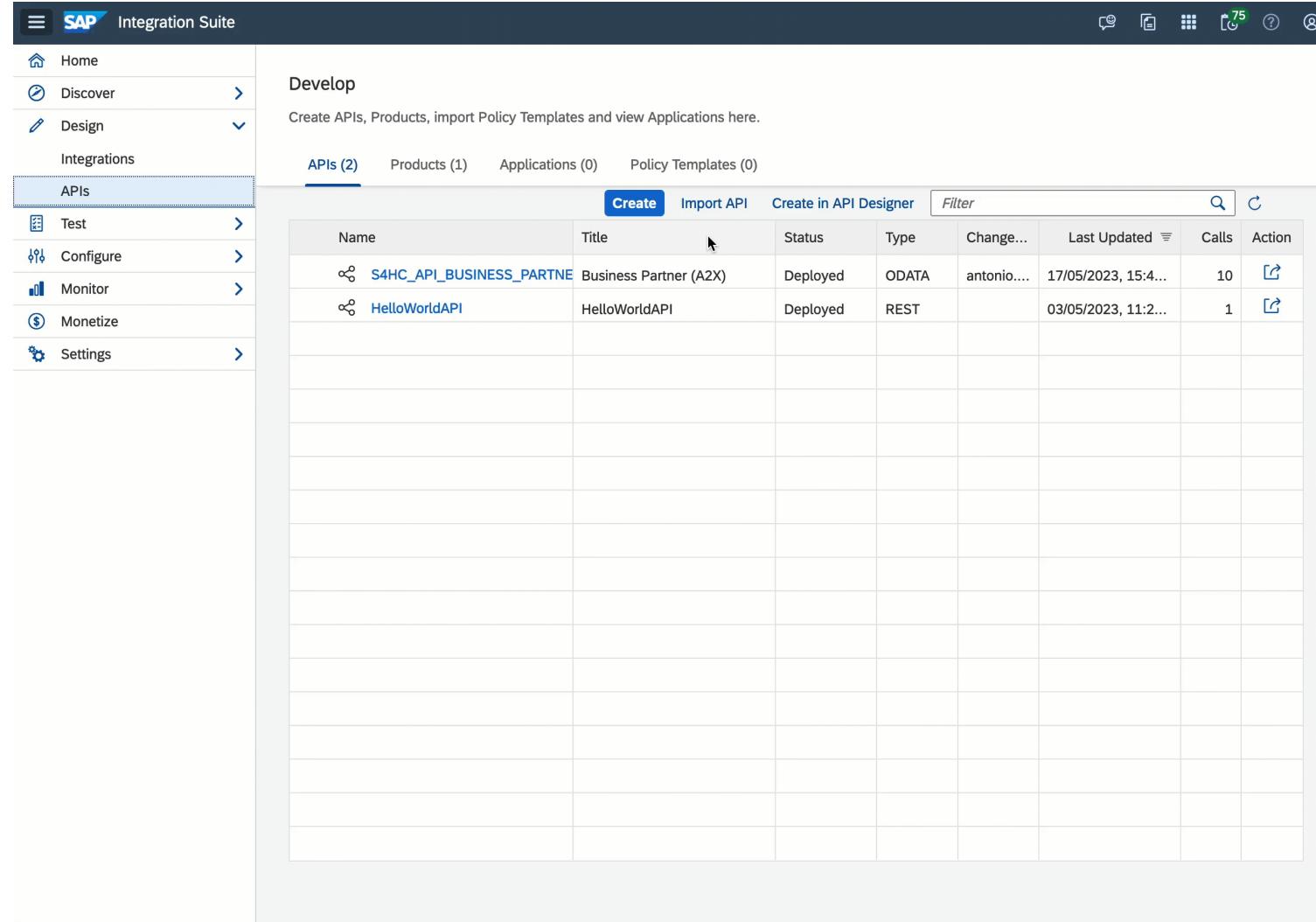
Metric	Value	Unit
Total API Errors	1	
S4HC_API_BUSINESS_PARTNER	1	

At the bottom right, there are buttons for "Hour", "Day", "Week", and "Month" to switch the time period for the monitoring data.

Exercise 06 - Publishing our API (20')

The screenshot shows the SAP Integration Suite interface for creating a product. The left sidebar navigation includes Home, Discover, Design (selected), Integrations, APIs (selected), Test, Configure, Monitor, Monetize, and Settings. The main content area is titled 'Create Product' and shows a logo for 'S4HC'. The tabs at the top are Overview (selected), APIs (0), Permission, Rate plans (0), and Custom Attribute (0). The 'Overview' tab contains fields for Name (S4HC), Title (SAP S/4HANA Cloud), Short Text, Quota, Requests Every (Interval), Scope, and Description (with rich text editor). Buttons at the top right include Save As Draft, Publish, and Cancel.

Exercise 07 - Import an API using an OpenAPI specification (15')



The screenshot shows the SAP Integration Suite interface. The left sidebar has a navigation tree with Home, Discover, Design (selected), Integrations, APIs (selected), Test, Configure, Monitor, Monetize, and Settings. The main area is titled 'Develop' and contains the message 'Create APIs, Products, import Policy Templates and view Applications here.' Below this are tabs for APIs (2), Products (1), Applications (0), and Policy Templates (0). A table lists two APIs:

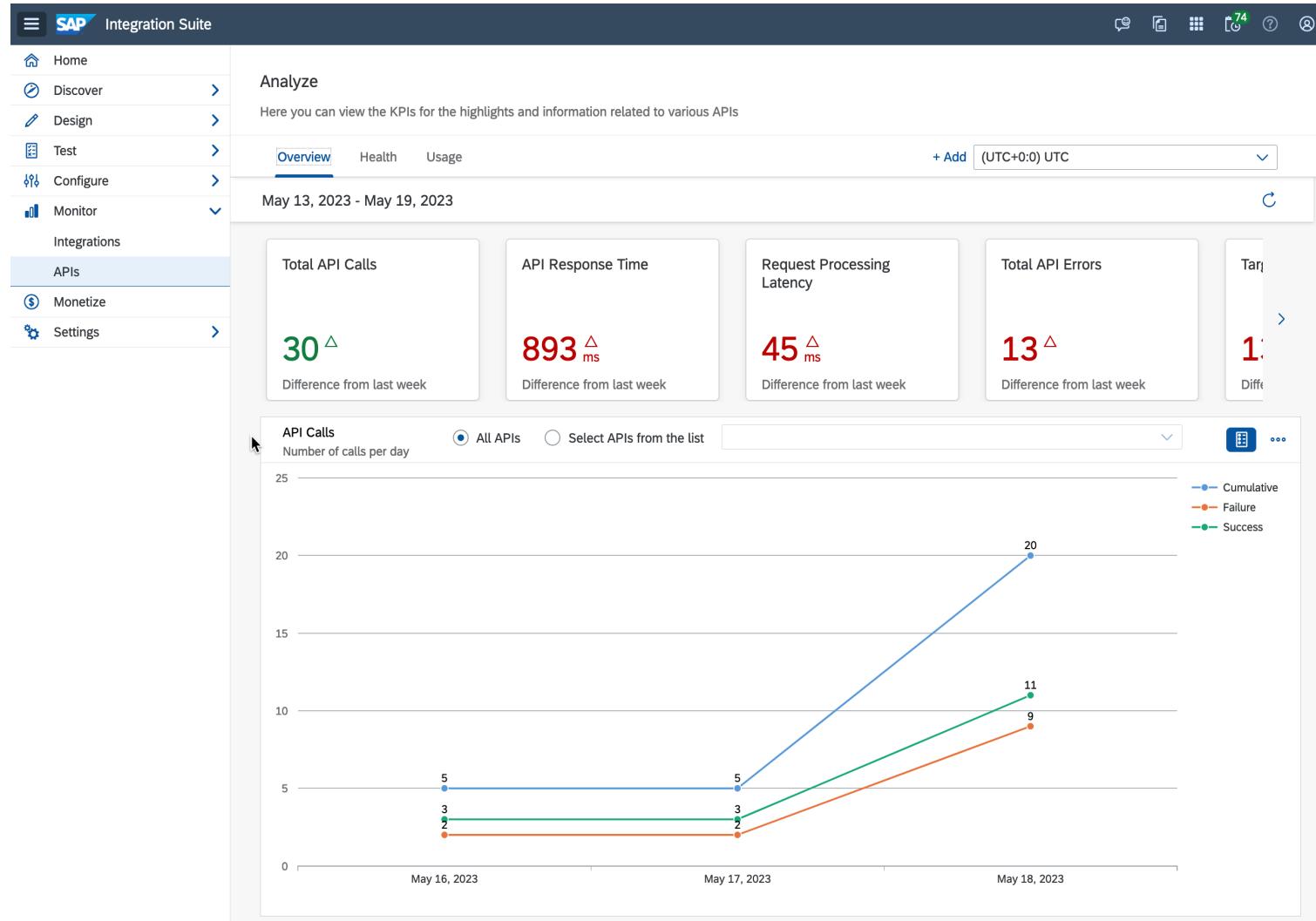
Name	Title	Status	Type	Change...	Last Updated	Calls	Action
S4HC_API_BUSINESS_PARTNE	Business Partner (A2X)	Deployed	ODATA	antonio....	17/05/2023, 15:4...	10	[Edit]
HelloWorldAPI	HelloWorldAPI	Deployed	REST		03/05/2023, 11:2...	1	[Edit]

Exercise 08 - Add an SAP SuccessFactors Employee Central API (15')

The screenshot shows the SAP Integration Suite interface. The left sidebar has a navigation tree with Home, Discover (selected), Integrations, APIs (selected), Design, and Test. The main content area is titled "Discover (APIs) / Discover (226)" and shows a list of APIs under the "ALL" category. A search bar is at the top of the list. The list includes:

API Name	Description	Published	Version	Vendor
SAP Revenue Growth Optimization	Forecast, optimize, and analyze account plans intelligently to maximize return on investment	about 23 hours ago	1.0.0	SAP
SAP Order Management Foundation	Consolidate and manage your order-related data in a central cloud-based service.	about 23 hours ago	1.0.0	SAP
SAP Subscription Billing	Automate and simplify your subscription and pay-per-use business using SAP Subscription Billing.	about 23 hours ago	1.0	SAP
SAP Solution Sales Configuration, Cloud Edition	Enhance your sales efficacy with our micro services package.	about 23 hours ago	1.0	SAP
SAP S/4HANA Cloud	SAP S/4HANA Cloud, the next generation digital core designed to help you run simple in a digital economy	a day ago	2302	SAP
SAP Sustainability Footprint Management	Assess, analyze and reduce corporate and product footprints	2 days ago	Beta	SAP
SAP Analytics Cloud	The REST API allows you to access data stored on an SAP Analytics Cloud tenant.	2 days ago	1	SAP
SAP Content Agent Service	Unified tool for content management of SAP BTP applications	2 days ago	1.0.0	SAP

Exercise 09 - Monitoring APIs (15')



Exercise 10 - API policies (20')

SAP Integration Suite

API Artifacts for PublicHolidays_Nager_Date_API

Policy Editor

Flows:

- ProxyEndpoint
- TargetEndpoint
- Created Policies
- Scripts

Policy Flow Routing properties and Scripts

Flows:

A Flow defines a processing pipeline that can control and channel how the API behaves and the information it carries. The message processing pipeline consists of a request flow and a response flow.

ProxyEndpoint and TargetEndpoint define a pipeline to process request and response messages. Each request or response flow is subdivided into:

- PreFlow: This flow is always executed as the first step in the segment where it is applied.
- PostFlow: This flow is always executed as the last step in the segment where it is applied after executing any conditional Flows.
- Conditional Flow: A condition associated to a flow. A flow can contain one or more conditions. Only the first condition met is executed.

Policies:

A set of predefined Policies supported by SAP API Management is available in the right pane. A Policy is a step that executes the said operation during runtime. A Policy step can be applied to a Flow in two ways:

1. Create a policy on the desired Flow segment
2. Attach an existing policy to a Flow segment

A sequence of policies can be applied on the desired Flow segment and they are

Edit Policy Template Cancel

Policies:

- Basic Authentication
- DecodeJWT
- GenerateJWT
- 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
- VerifyJWT
- XML Threat Protection

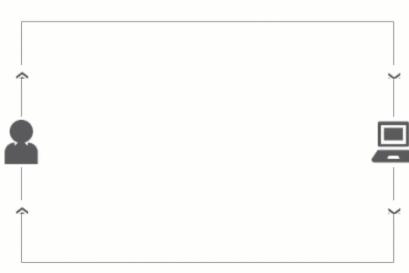
Security Policies

Traffic Management Policies

Mediation Policies

- Access Control
- Invalidate Cache
- Lookup Cache
- Populate Cache
- Quota
- Reset Quota
- Response Cache
- Spike Arrest

- Access Entity
- Assign Message
- Extract Variables



Exercise 11 - Consume protected APIs by creating an application (15')

The screenshot shows the 'My Workspace' section of the API Business Hub Enterprise interface. The top navigation bar includes 'API Business Hub Enterprise', 'My Workspace' (which is highlighted in yellow), 'Test Environment', 'Enterprise Manager', 'New Design' (with a toggle switch), 'Site Editor', and 'Hi Antonio'. Below the header, the title 'My Workspace' is displayed with the subtitle 'View your applications, costs and analyze reports'. A horizontal menu bar below the title contains four items: 'Applications' (which is selected and highlighted in yellow), 'Cost', 'Performance Analytics', and 'Error Analytics'. The main content area is titled 'Applications' and displays a message: 'Applications and the call details for the current month.' It includes a timestamp 'Last refreshed on: 22/05/2023, 16:43:44', a 'Create New Application' button, and a search bar with the placeholder 'Find by: Application Name' and a magnifying glass icon. A table header with columns 'Application', 'Developer', 'Total Calls', and 'Actions' is shown, followed by a message 'No data available yet!' and the subtext 'When there is, you'll see it here.'

Exercise 12 - Protecting our APIs (20')

The screenshot shows the SAP Integration Suite Policy Editor interface. The left sidebar lists 'API Artifacts for S4HC_API_BUSINESS_PARTNER' with sections for Flows, Policies, Scripts, and Created Policies. The main area displays a policy flow diagram with a user icon on the left and a laptop icon on the right, connected by a double-headed arrow. Below the diagram is a 'Policy Flow Routing properties and Scripts' panel. The 'Flows:' section contains detailed information about request and response flows, including PreFlow, PostFlow, and Conditional Flow. The 'Policies:' section describes how policies are applied to flows. To the right of the main area is a large list of available policies, organized into categories: Security Policies, Traffic Management Policies, and Mediation Policies. The 'Security Policies' category includes Basic Authentication, DecodeJWT, GenerateJWT, 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, VerifyJWT, and XML Threat Protection. The 'Traffic Management Policies' category includes Access Control, Invalidate Cache, Lookup Cache, Populate Cache, Quota, Reset Quota, Response Cache, and Spike Arrest. The 'Mediation Policies' category includes Access Entity, Assign Message, and Extract Variables.

API Artifacts for S4HC_API_BUSINESS_PARTNER

Policy Editor

Flows

- > ProxyEndpoint
- > TargetEndpoint
- > Created Policies
- > Scripts

Policy Flow Routing properties and Scripts

Flows:

A Flow defines a processing pipeline that can control and channel how the API behaves and the information it carries. The message processing pipeline consists of a request flow and a response flow. ProxyEndpoint and TargetEndpoint define a pipeline to process request and response messages. Each request or response flow is subdivided into:

- PreFlow: This flow is always executed as the first step in the segment where it is applied.
- PostFlow: This flow is always executed as the last step in the segment where it is applied after executing any conditional Flows.
- Conditional Flow: A condition associated to a flow. A flow can contain one or more conditions. Only the first condition met is executed.

Policies:

A set of predefined Policies supported by SAP API Management is available in the right pane. A Policy is a step that executes the said operation during runtime. A Policy step can be applied to a Flow in two ways:

1. Create a policy on the desired Flow segment
2. Attach an existing policy to a Flow segment

A sequence of policies can be applied on the desired Flow segment and they are executed in the same order in which they are applied. In addition, a conditional String can be applied and the policy is executed only if a match is found.

Edits Policy Template Cancel

Policy Templates

Security Policies

- Basic Authentication
- DecodeJWT
- GenerateJWT
- 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
- VerifyJWT
- XML Threat Protection

Traffic Management Policies

- Access Control
- Invalidate Cache
- Lookup Cache
- Populate Cache
- Quota
- Reset Quota
- Response Cache
- Spike Arrest

Mediation Policies

- Access Entity
- Assign Message
- Extract Variables

Exercise 13 - Editing API paths, operations, and documentation (15')

The screenshot shows the SAP Integration Suite interface for managing APIs. The main title bar reads "SAP Integration Suite". The left sidebar lists various API icons, and the central pane displays the details for the API "S4HC_API_BUSINESS_PARTNER".

Status: Deployed
https://dev-advocates-ajmc.test.apimanagement.eu10.hana.ondemand.com:443/s4hanacloud/sap/opu/odata
API Proxy URL: /sap/API_BUSINESS_PARTNER

The main configuration area includes the following fields:

- Title: * Business Partner (A2X)
- Host Alias: (dropdown menu)
- API Base Path: /s4hanacloud/sap/opu/odata/sap/API_BUSINESS_PARTNER
- API State: Active
- Description: (Rich Text Editor) This service enables you to create, display, update, and delete data related to Business Partner, Supplier, and Customer with the data provided in a payload, in an API call. This service also supports create deep entity operation and batch processing.

On the right side, there are several cards providing summary information:

- Calls (05/01/2023 - 05/29/2023): 28
- API Health: 12 green, 16 red
- Key Value Map Associated (0): No data
- Created On: 16/05/2023, 13:51:10
Created By: antonio.maradiaga@sap.com
- Changed On: 29/05/2023, 11:10:57
Changed By: antonio.maradiaga@sap.com

At the bottom, a section titled "Products Associated (1)" is partially visible.

**Thanks for
attending!!!**

