



API From Scratch to Live in an Enterprise Environment



@SVENWAL



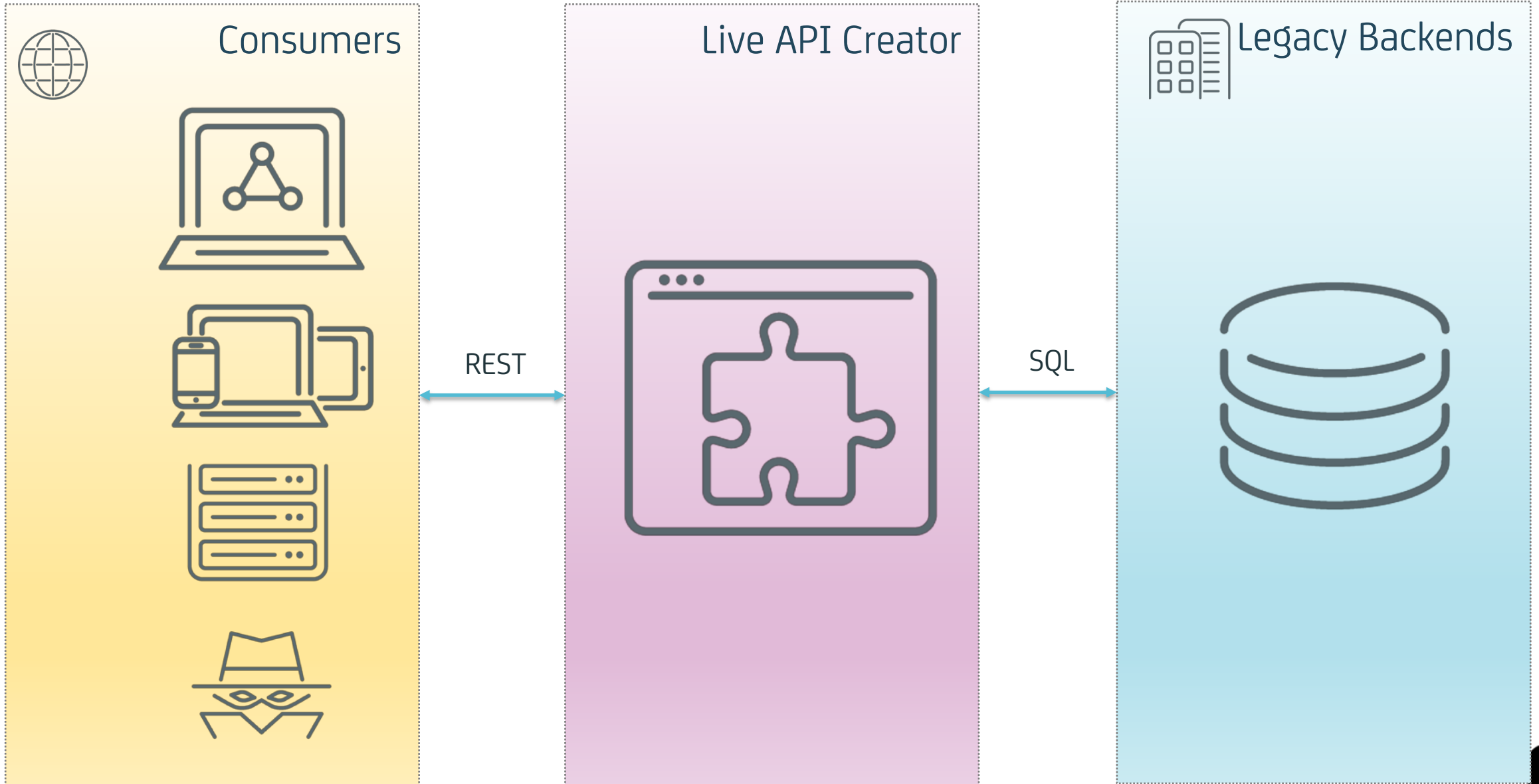
Enterprise Use

Enterprise use?

- API Management being a core **but not standalone solution**
- API Management not being used by a project / department / division but with an **enterprise strategy**
- **Integration** with enterprise architecture is critical for success
- Getting access to instances / creating own instance must be integrated into company **workflows**
- **Central settings vs. per project settings** must be taken care of

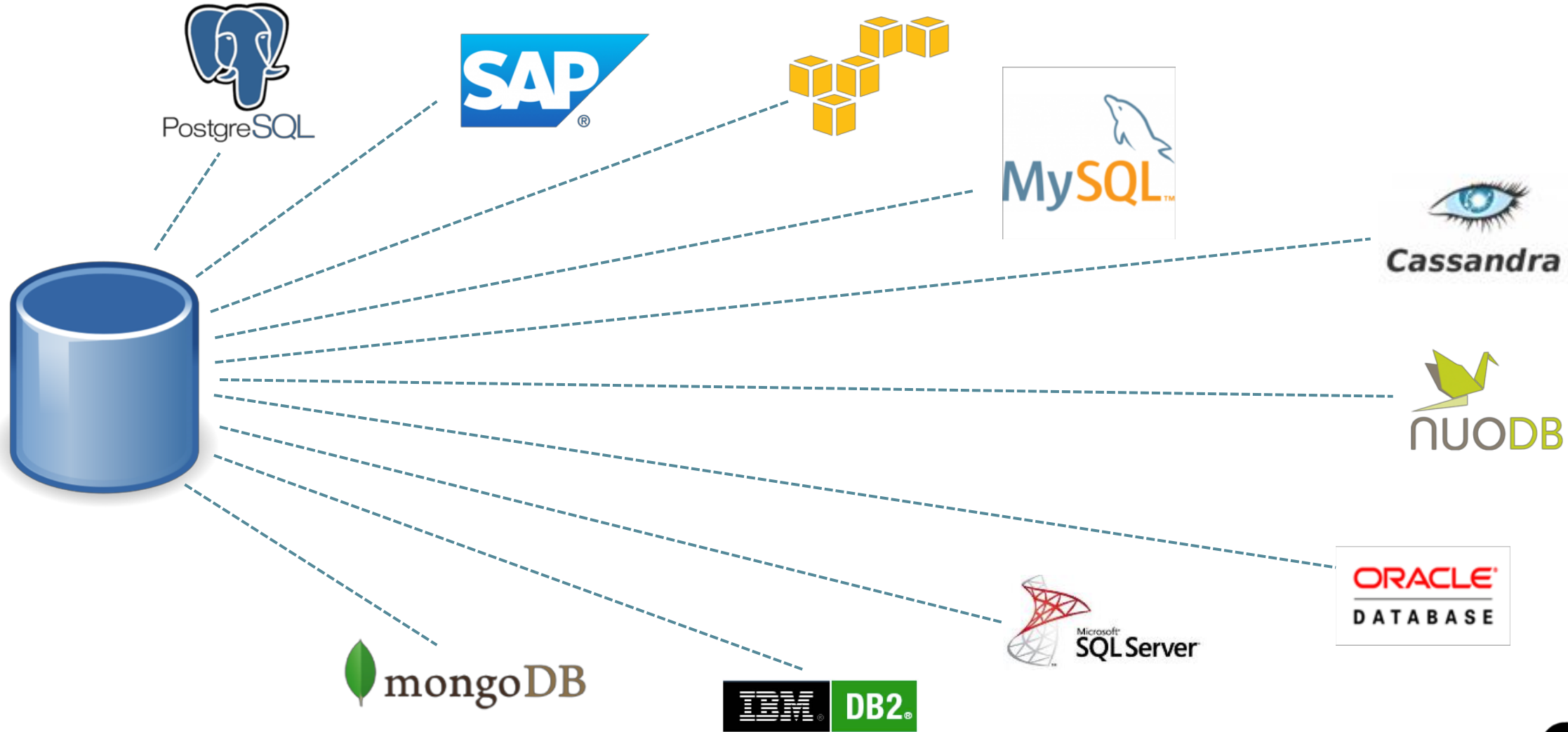
API Creation

API Creation – SQL & JavaScript





CA Live API Creator



CA Live API Creator

API Creation

1. Type

Use this wizard to select your approach for API Creation.

2. Data Source

As a first-time user, we recommend you click **Database First**, then select the Northwind database to create your first API.

3. Connection

4. API Setup

You can then declare custom APIs, logic, and data sources, extend with JavaScript (Invoke Web Services, Java code, etc), and run with Data Explorer, REST Lab, or your own apps.

Database First

Connect to an existing database, for a default API based on schema discovery

App First

Create a new database by graphically building an application in Data Explorer

Code First

Create an empty API and write code for function endpoints or JavaScript resources

Model First

Create a new database and import a model to create your schema and API

The screenshot displays the CA Live API Creator interface for the 'Employee API'. The left sidebar shows a navigation menu with sections: Favorites, Create, Manage, and Analyze. The 'REST Lab' option is selected under the 'Create' section. The main workspace shows the configuration for a REST endpoint:

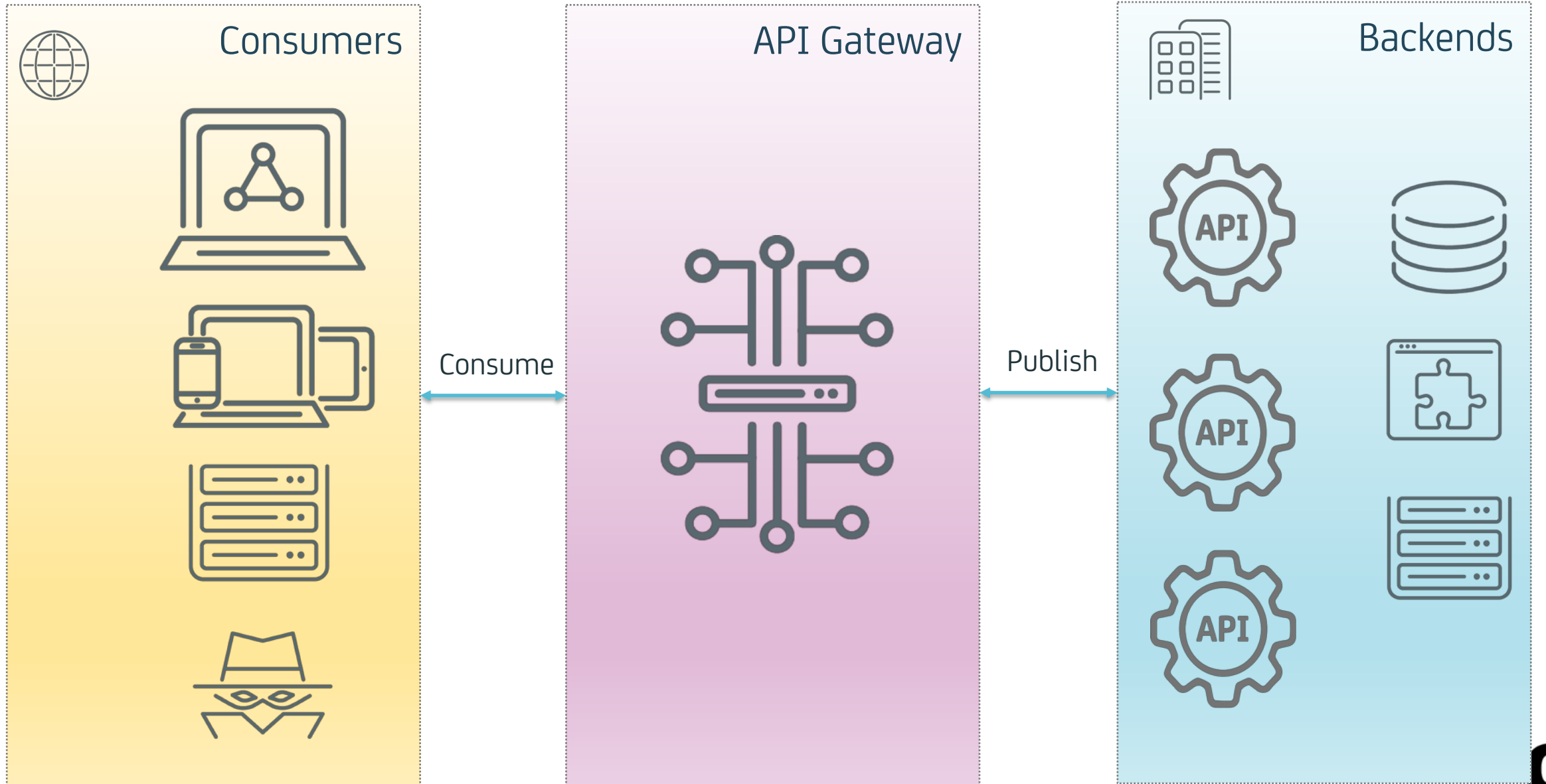
- Endpoint: Table | mainemployees | ADD
- API version: v1
- Auth Token: Admin key
- URL: http://dev.ca.com:8282/rest/default/employees/v1/mainemployees
- Request Method: GET
- Request Body: Rulessummary=false&bsummary=false&nometa=true
- Response Format: omit

The 'Request' tab shows a successful call with the following response:

```
1 - 1
2 - {
3   "emp_no": 10001,
4   "birth_date": "1953-09-02",
5   "first_name": "Georgi",
6   "last_name": "Facello",
7   "gender": "M",
8   "hire_date": "1988-06-26"
9 }
10 - {
11  "emp_no": 10002,
12  "birth_date": "1964-06-02",
13  "first_name": "Beales",
14  "last_name": "Simel",
15  "gender": "F",
16  "hire_date": "1985-11-21"
17 }
18 - {
19  "emp_no": 10003,
20  "birth_date": "1959-12-03",
21  "first_name": "Parto",
22  "last_name": "Banford",
23  "gender": "M",
24  "hire_date": "1986-08-28"
25 }
26 - {
27  "emp_no": 10004,
28  "birth_date": "1954-05-01",
29  "first_name": "Chretien",
30  "last_name": "Koblick",
31  "gender": "M",
32  "hire_date": "1986-12-01"
33 }
```

API Gateway

API Gateway – The Core



API Gateway – Main Functions

- Security, Security, Security – did I mention Security...?
 - Authentication
 - Message security (SQL, JavaScript, ...)
- Rate limits and quotas
- Integration / orchestration
- Mediation
- Caching

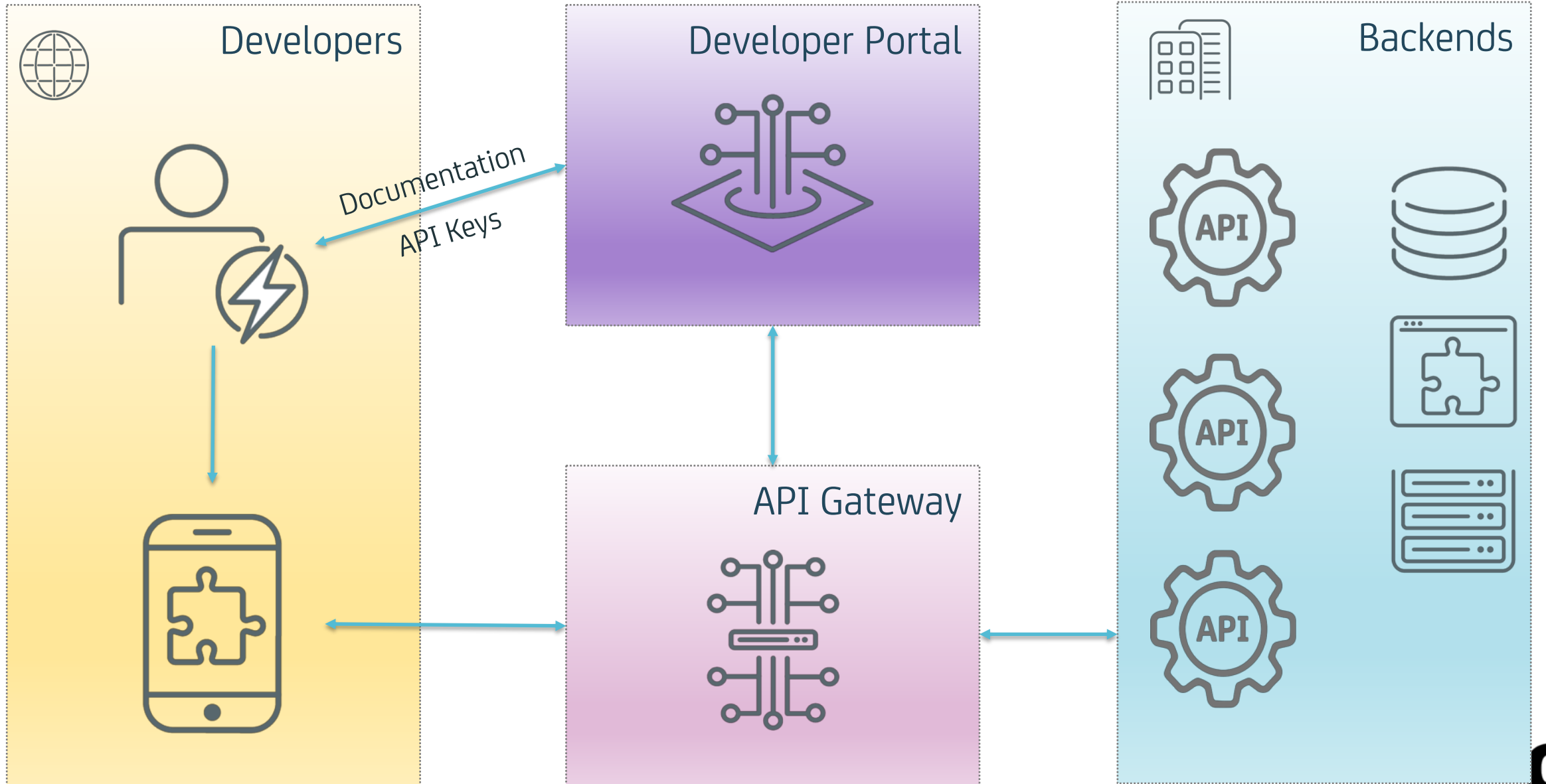
CA Policy Manager

The screenshot displays the CA Policy Manager interface for configuring a policy named "Employee API". The interface is divided into several sections:

- Left Panel:** A search bar and a tree view of policy categories. The "Identity Providers" category is expanded, showing various sub-categories like "Access Control", "Transport Layer Security (TLS)", "API Security", etc.
- Top Panel:** The title bar shows "CA Policy Manager 9.3.00 (OS)" and a status indicator "Audit Alerts Waiting".
- Main Panel:** The configuration details for the "Employee API" policy. It shows a list of assertions and actions. Key elements include:
 - Assertions: "All assertions must evaluate to true" and "At least one assertion must evaluate to true".
 - Actions: "Compare Variable" (checking if a variable is equal to a simple data structure), "Add Audit Details", "Export Variables from Fragment", "Continue Processing", and "Stop Processing".
 - Comments: "LAC-PolicyType=reject".
- Bottom Panel:** A search bar and a list of related policies or templates, such as "API Portal Integration", "API Portal SSO", "Combined Image Add-Ons (Custom Policies)", etc.

Developer Portal

Developer Portal



Developer Portal – Main Functions

- Self service
- Discovery
- Documentation
- API Explorer
- API Keys

CA Developer Portal

The screenshot shows the CA Developer Portal homepage. At the top left is the logo "API Developer Portal". At the top right are search and sign-up buttons. The main heading is "The Power of API Management" with a sub-heading "Securely expose APIs to developers while providing them with all the tools and resources they need in order to quickly build apps against your APIs." Below this are two main sections: "Publish APIs" and "Get An API Key".

API Developer Portal Search Sign up

The Power of API Management

Securely expose APIs to developers while providing them with all the tools and resources they need in order to quickly build apps against your APIs.

Publish APIs

The Add API Wizard provides an easy way to publish your existing APIs on the Portal. Before you publish any APIs, you need to create a EULA that you will associate with the APIs. Also, please ensure that your API backend is CORS enabled before you publish any APIs.

[View Documentation](#)

How to publish an API

Play video

Get An API Key

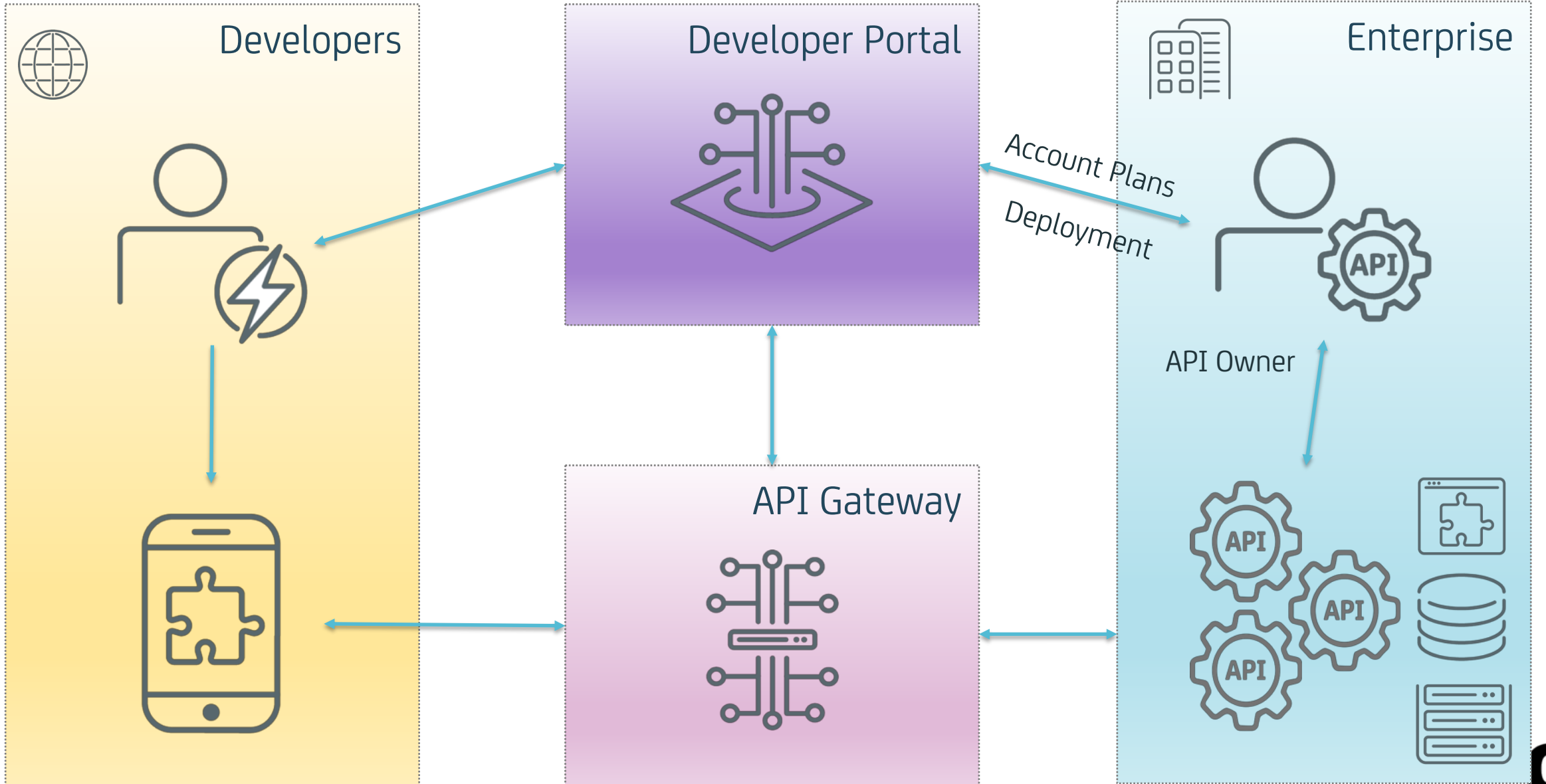
To get an API key, add an application to the Portal. The Portal assigns each registered application a unique API key. Applications need an API key to access APIs. You also need an API key to test APIs in the API Explorer.

How to get an API key

Play video

API Management

API Management



API Management– Main Functions

- Publishing
- Versioning
- Policies
- Plans
- Monitoring & Analytics

API Publishing

The screenshot displays the 'Publish an API' interface. On the left, a sidebar contains four tabs: 'API Definition', 'API Details', 'Proxy Configuration', and 'API Explorer'. The main content area is divided into three sections: 'Proxy Details', 'Policy Templates', and a 'Publish' button at the bottom. The 'Proxy Details' section has a 'Proxy URL' field with the value 'https://www.cashuback.com'. The 'Policy Templates' section lists two templates: 'Standard Policy Template - OAuth 2.0' and 'Rate Limit', each with a 'Remove' button. Below the list, there is a 'Rate limit requests to the specified limits' section with a text input field containing '10' and a 'Publish' button at the bottom left. On the right, a 'How do I publish an API?' sidebar contains a numbered list of four steps and a 'View Documentation' link.

API Publishing Interface

API Definition
Add a Swagger or WSDL file to publish your API

API Details
Group information associated with API

Proxy Configuration
Group information associated with API

API Explorer
Configure when API is tested

Proxy Details

Proxy URL ⓘ
https://www.cashuback.com publish

Proxy authentication type: URL must be set

Policy Templates

Policy Templates ⓘ

- Standard Policy Template - OAuth 2.0 Remove
- Rate Limit Remove

Rate limit requests to the specified limits.

Maximum requests per second (value greater than zero) *
10
Value must be a whole number

Rate Limit
Publish

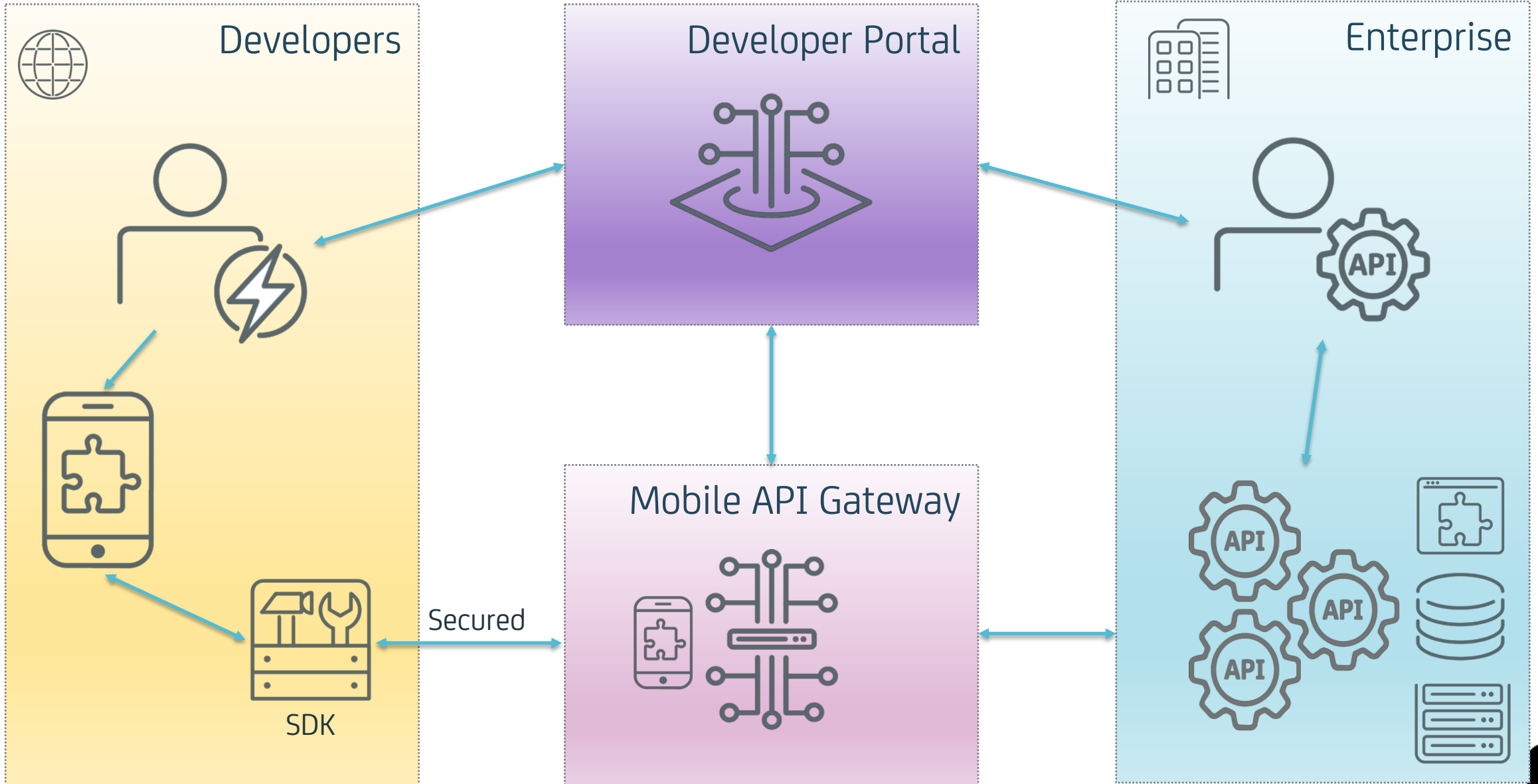
How do I publish an API?

- On the API Definition tab, upload a Swagger or WSDL file. This will pre-fill the API details for you.
- On the API Details tab, you can provide basic information about your API. Associating a Proxy API with an Organization is optional but a great way to restrict its access to a specific group.
- The Proxy Configuration tab allows you to configure how your API is deployed and protected. Policy Templates are defined by your administrator and enable you to apply advanced runtime protection. You can add one or more policies and they will be applied to the selected order when requests to your API are processed.
- On the API Explorer tab you can configure the authentication settings to test your API via the API Explorer.

[View Documentation](#)

Mobile SDK

API Management



Mobile API Gateway

- Mobile Security
- Policies on Gateway
- SDK on Clients
- OAuth, OpenID Connect, Mutual Trust, Identifier, ...
- Easy to use

CA Mobile API Gateway

CA for Developers
CA Mobile API Gateway

Features Docs Blog Videos Support

Documentation

Mobile SDK for CA Mobile API Gateway v1.8.00

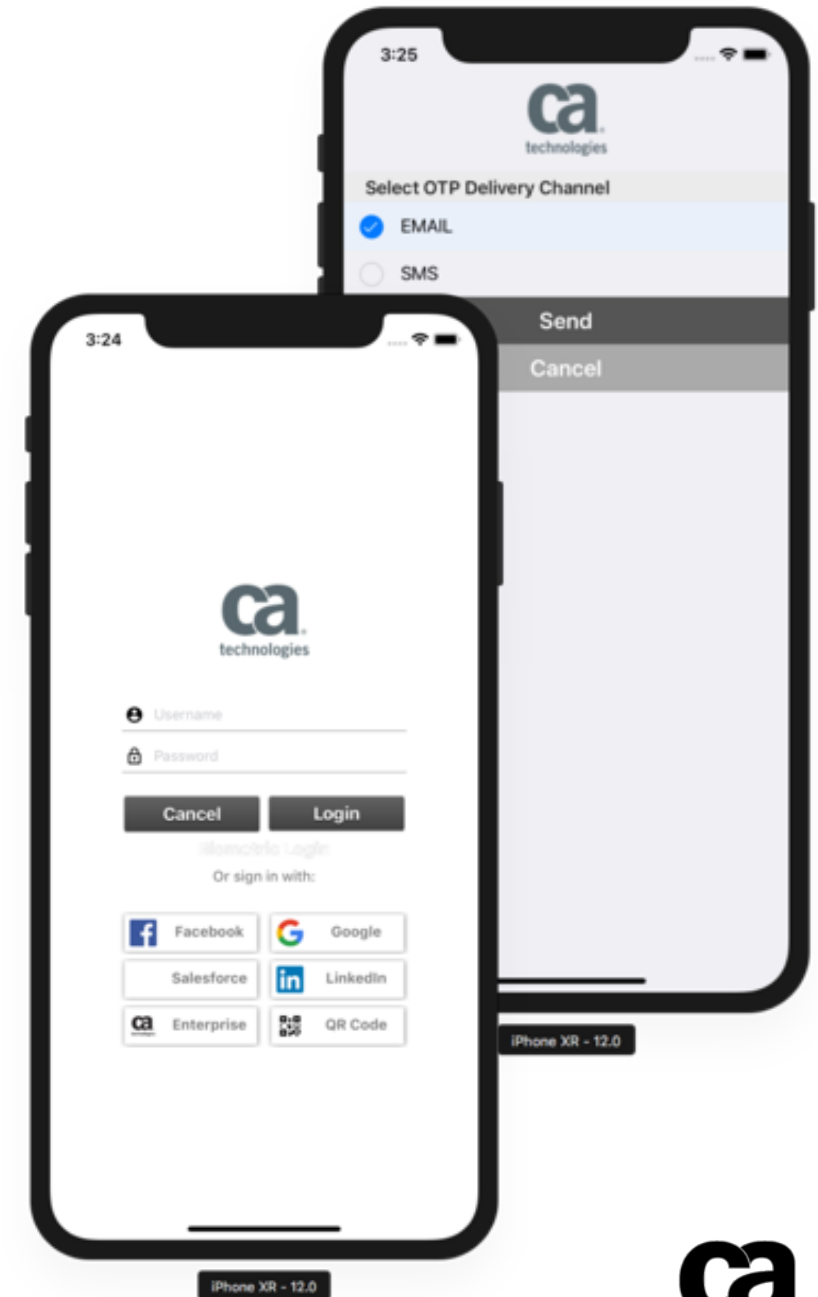
For Developers

- CLIENT**
Apple
iOS
[Guides >](#)
[Reference >](#)
- CLIENT**
Android
Android
[Guides >](#)
[Reference >](#)
- CLIENT**
Cordova
Cordova
[Guides >](#)
[Reference >](#)
- CLIENT**
Xamarin
Xamarin
[Guides >](#)
[Reference >](#)

For Admins

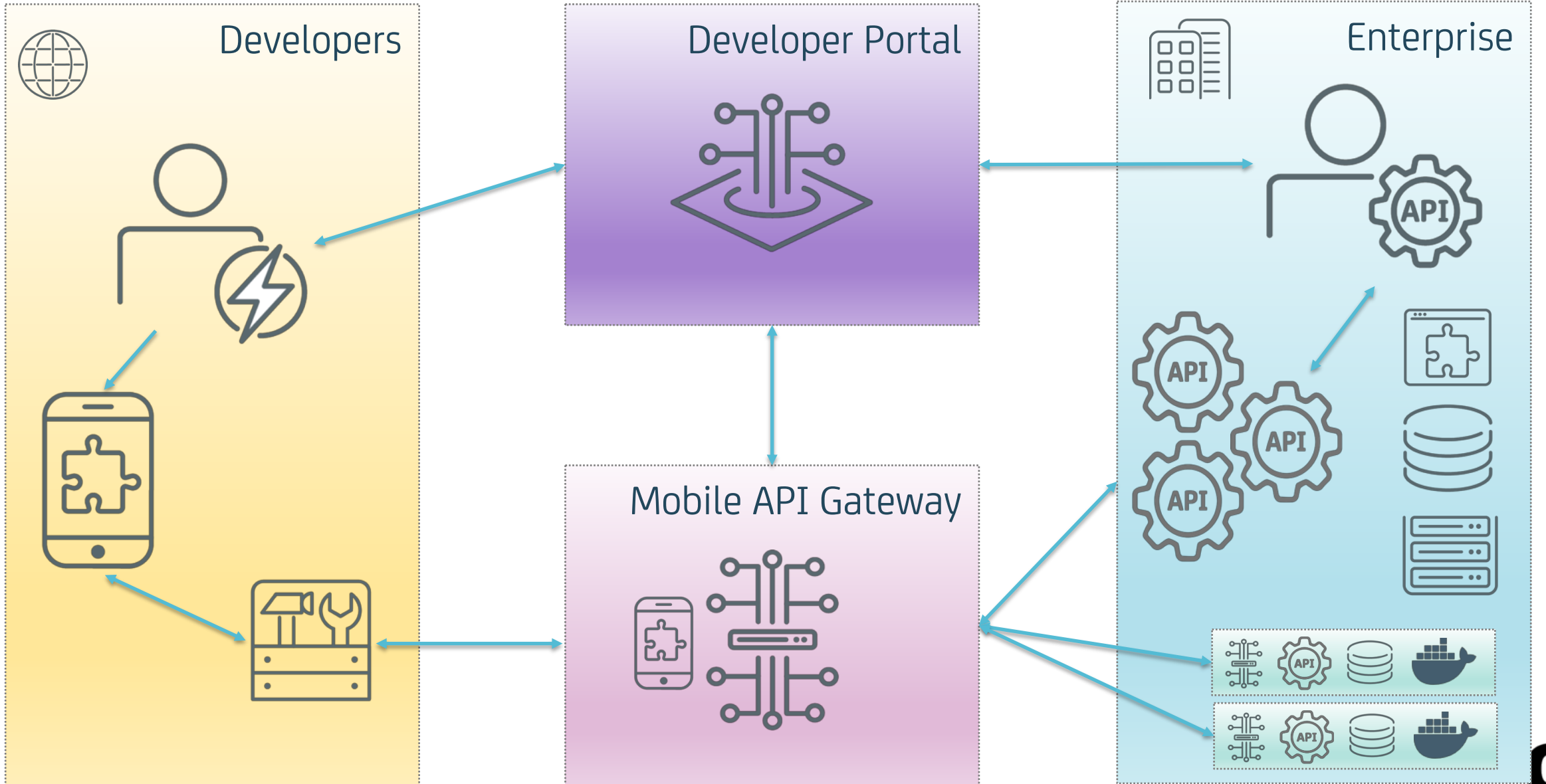
- SERVER**
CA Mobile API Gateway (MAG)
[Guides >](#)

+ Previous Versions



Microgateway

Microgateway

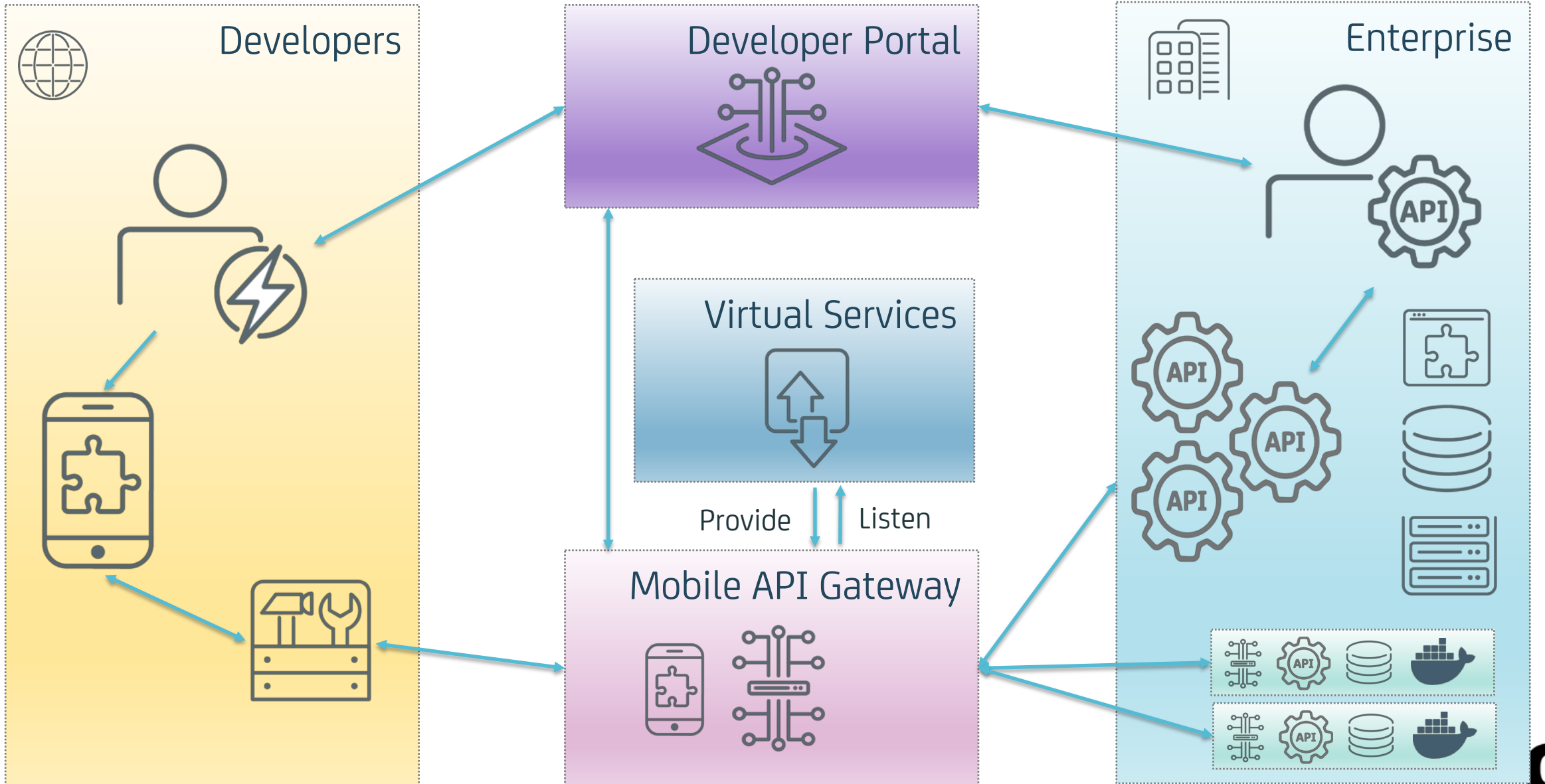


Microgateway

- Docker based
- No team external knowledge needed
- No team external approval needed
- Central security and monitoring enabled
- Flexibility as in Edge Gateway for administrators

Service Virtualization

Service Virtualization



Service Virtualization

- Connection to gateway to listen on actual API calls
- Swagger / OpenAPI based import
- Gateway could provide virtual service as sandbox
- Updates in service will update virtual service on the fly
- Usage not hard linked to gateway (create internal test APIs)

Virtual Services

CA DevTest Portal

Current Project: VSE

Home | test

Recording Information

Selected VSE Server: VSE

Recording Name: test

Description: test

Protocol: HTTP

Advanced Mode

Test

Status Draft

HTTP Transport Protocol

Record Configure Save

Client

VSE Recorder

Server

Use SSL At 27001 Use SSL localhost:8080

Do not modify host header parameter received from client

Start Recording

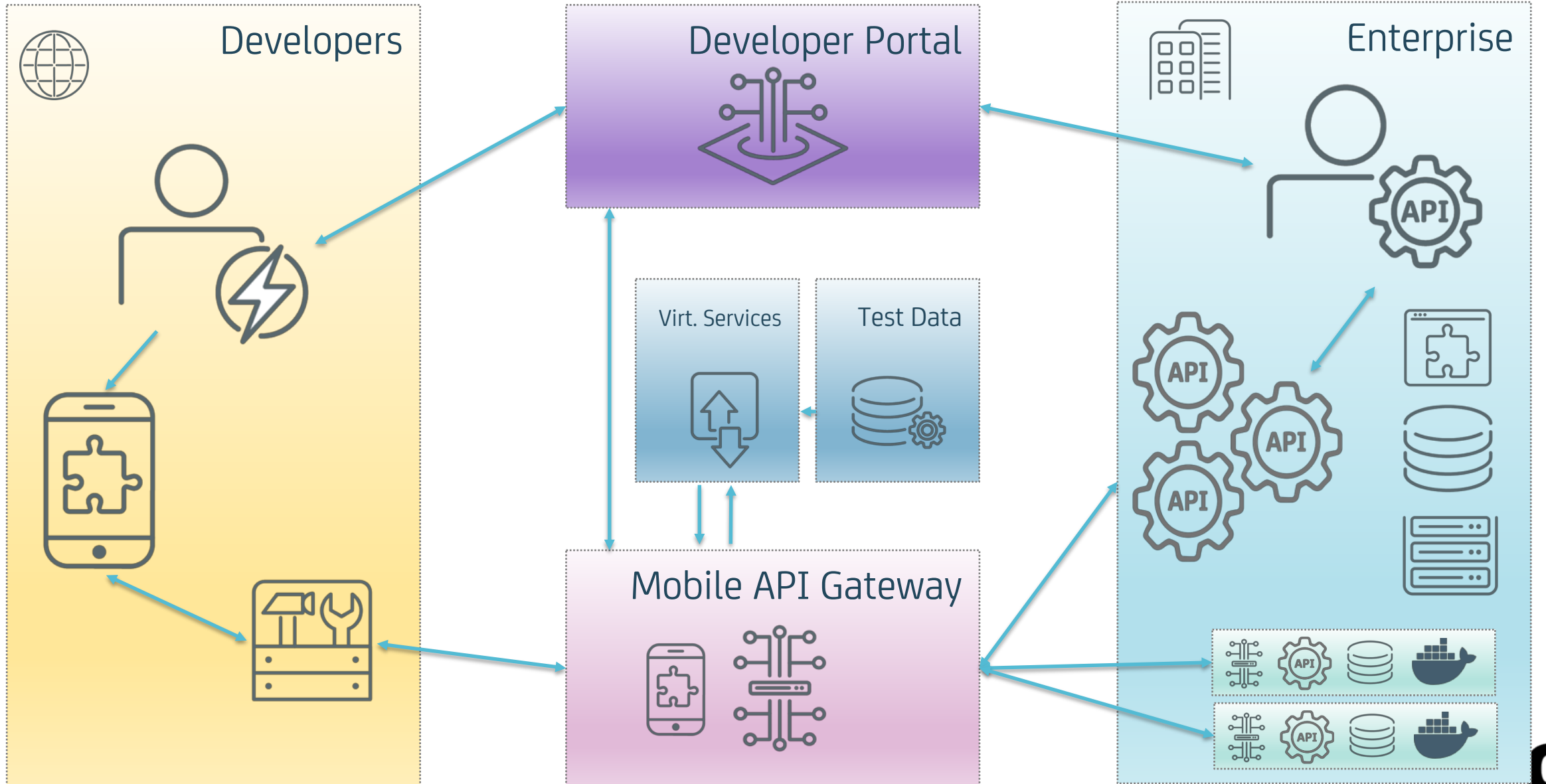
Virtual Services

The screenshot shows the CA Dev/Test Portal interface. The top navigation bar includes the CA logo, 'Dev/Test Portal', and 'Current Project: VSE'. The left sidebar contains navigation options: Home, Create (with a dropdown), API Test, Virtual Service, Copybook Bundle, Manage, Monitor (with a dropdown), Tests, Virtual Service Environments (with a dropdown), VSE, Server Health, CVS, Application Insight, Reporting, and Settings. The main content area is titled 'Summary' and shows 'Virtual Services' and 'Recordings' status. The 'Virtual Services' summary shows 4 Total, 4 Running, 0 Offline, and 0 Fail. The 'Recordings' summary shows 0 Total, 0 Recording, 1 Offline, and 0 Fail. Below the summary is a table of services:

Actions	Category	Name	Resource/Type	Status	Ten Count	Up-time	Errors	Group	Execution Mode	Capacity	Think Scale	Auto-Restart
		test	HTTP_GATEWAY_RU17...	Offline			1					
		getVehicleDetailsByPlate	8101 - http://Amdemo...	Running	0	0-days 00:10:20			Most Efficient	1	100	Enabled
		RequestFulfillment_1.0	8001 - http://Amdemo...	Running	0	0-days 00:10:20			Most Efficient	1	100	Enabled
		ProcessOrderRequest_1...	8004 - http://Amdemo...	Running	0	0-days 00:10:20			Most Efficient	1	100	Enabled
		GetFulfillmentAddress_1...	8002 - http://Amdemo...	Running	0	0-days 00:10:20			Most Efficient	1	100	Enabled

Test Data

Test Data Management



Test Data Management

- Services based on Service Virtualization and/or Swagger/OpenAPI
- Test data generation with rules, for example
 - Last name German
 - Street name Germany
 - ZIP code UK
- Test data pool reservation
 - Own tests not in conflict with other testes (e. g. PUT or POST requests changing the contents)

Test Data

The screenshot shows the CA Test Data Manager Portal interface. The top navigation bar includes the CA logo, the title "Test Data Manager Portal", a project dropdown menu set to "SP1804 | 1.0.0", and a user profile for "admin@ca.com". A left-hand sidebar contains a list of navigation items: Modeling, Data Profiling, Generators, Orchestration, Self-Service Flows, Self-Service Catalog, Submitted Requests, My Reservations, My Clones, vTDM, and Configuration. The main content area features a "Welcome to CA Test Data Manager Portal" message with the text "Below are some simple steps to get you started." followed by four numbered steps:

- 1 Projects and Versions**: "Create a project and version, or select an existing one." The instruction says to click "Project Manager" in the top right, then "New Project", and name the project and first version. A dropdown menu labeled "Project" with the text "Select a project and version" is shown.
- 2 Data Modeling and Data Generation**: "Model your data and then generate!" The instruction says to model data by registering files such as XSD or XMI, and then deriving tables from the structures found in the files. After modeling, use a Generator to define rules and publish new test data.
- 3 Self-Service Catalog**: "Finding and generating data for testers made simple and fast." The instruction says to allow testers to find and generate test data themselves via intuitive request forms that are made available in the Self-Service Catalog.
- 4 Additional Help**: "For more information on getting started, or if you need more specific information on features, functions, or processes for provisioning test data, see links below. Or go to the CA TDM Portal online documentation."

At the bottom of the main content area, there is a section titled "Here you'll find links to specific information about CA Test Data Manager Portal concepts, features, architecture and processes." This section is divided into two columns: "Help Topics" and "Communities".

Help Topics

- Understanding CA TDM Portal
- Data Generation functions reference
- CA Test Data Manager home

Communities

Follow the latest CA TDM Portal discussions going on in the [Dev-test](#)

Test Data

The screenshot displays the 'Test Data Manager Portal' interface for 'Job 640'. The main area shows a heatmap representing test results across 15/99 tables. The heatmap is divided into yellow and green cells, with white checkmarks indicating successful or low-risk results. The right-hand panel includes a 'Filter' section, a 'Risk' scale (Very High to Not P2), and a 'Table Selection' section.

Navigation Sidebar:

- Working
- Data Profiling
- Set-up
- Scan
- Job Requests
- Ready for Review
- Sign-off
- Reports
- Generators
- Orchestration
- Self-Service Flows
- Self-Service Catalog
- Submitted Requests
- My Reservations
- My Clones
- vCDM
- Configuration

Results Summary:

- 39 P2 Items found
- 15/99 Tables confirmed
- Zoom: [Slider]

Table Selection:

No table selected. Select a table to review.

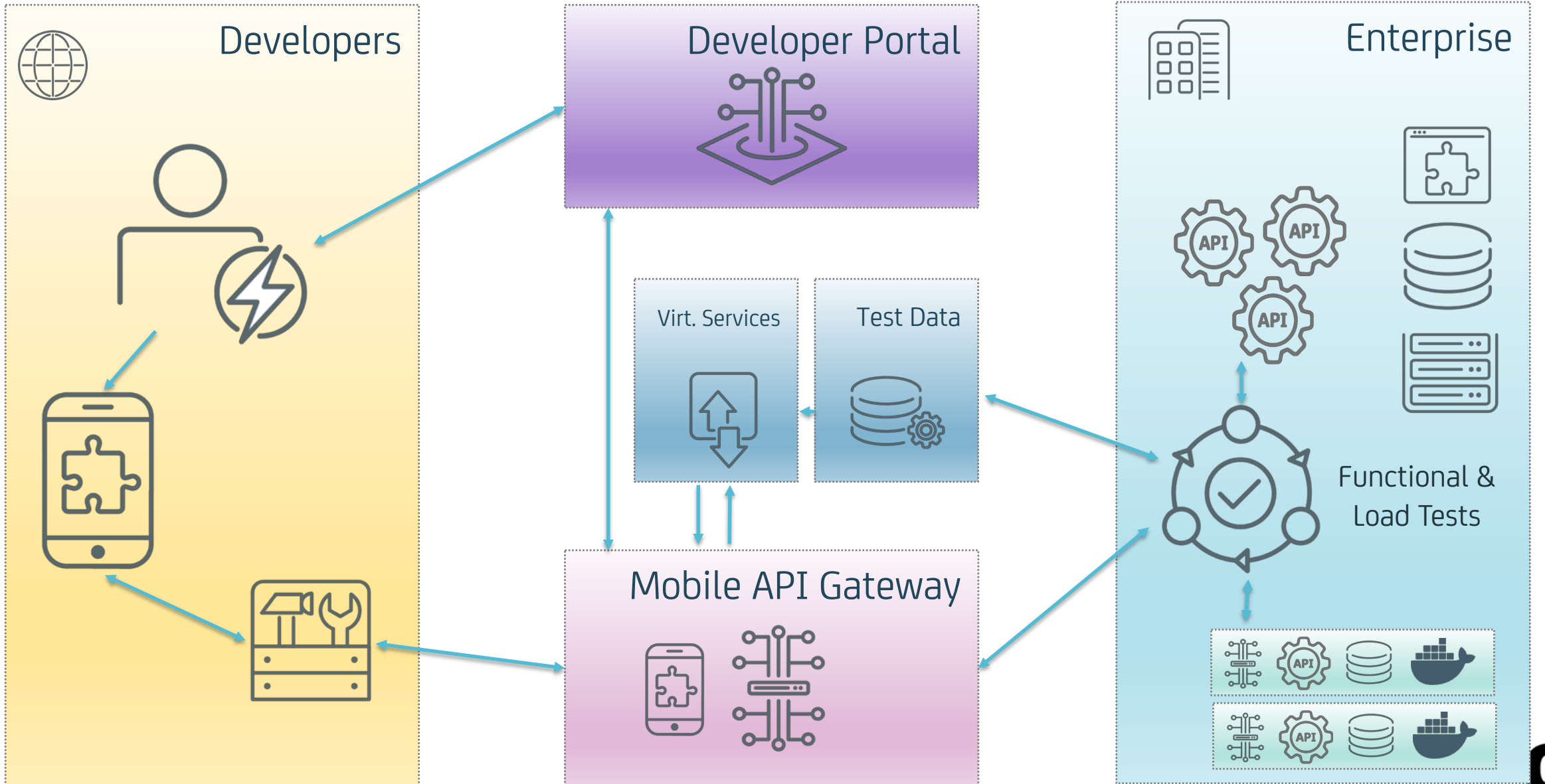
Risk Scale:

- Very High (Red)
- High (Orange)
- Medium (Yellow)
- Low (Light Green)
- Very Low (Dark Green)
- Not P2 (Grey)

Buttons: CONFIRM, PHOTOGRAPH, NOT P2, BACK, CREATE REPORT

Automated Testing

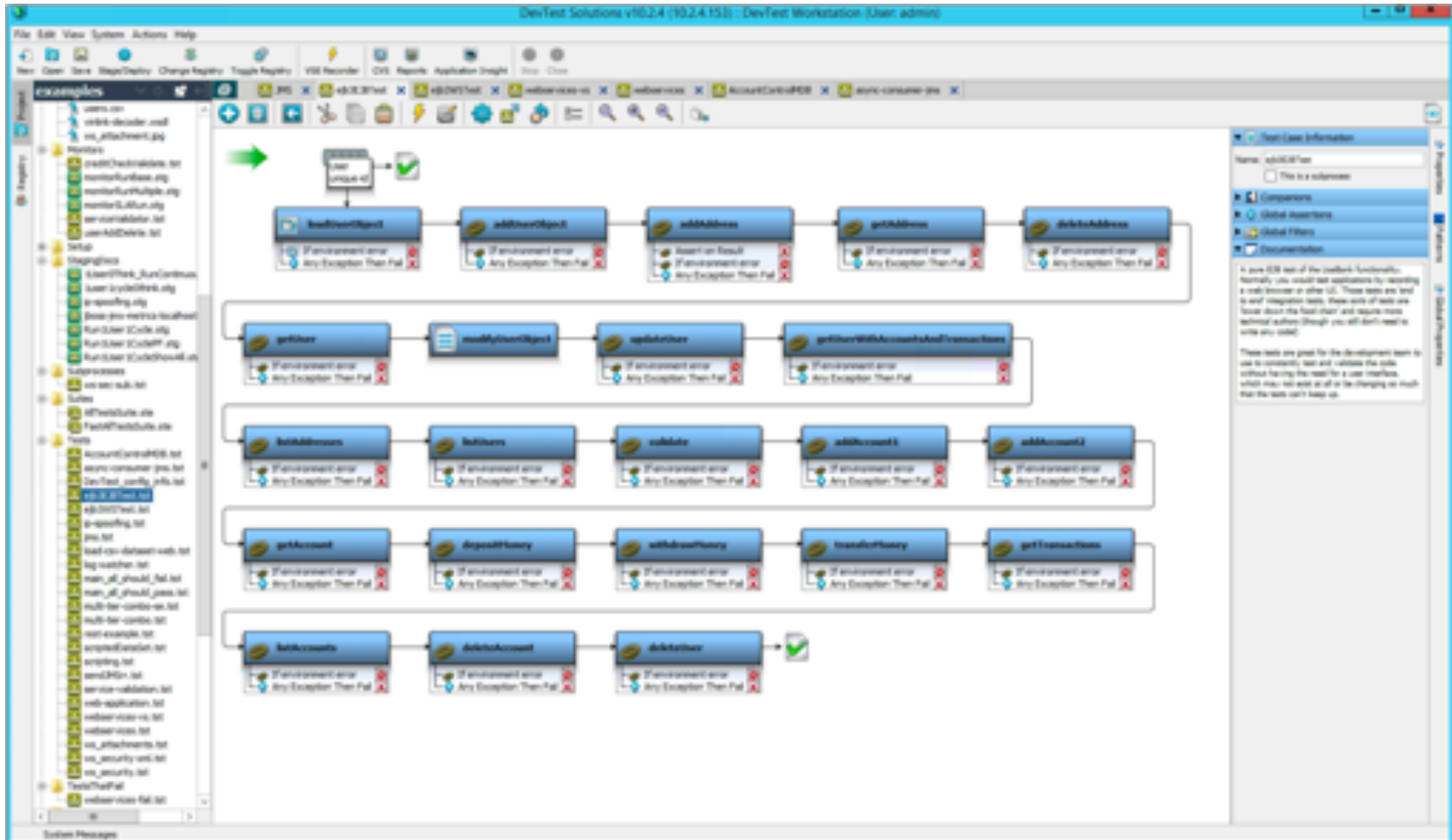
Test Data Management



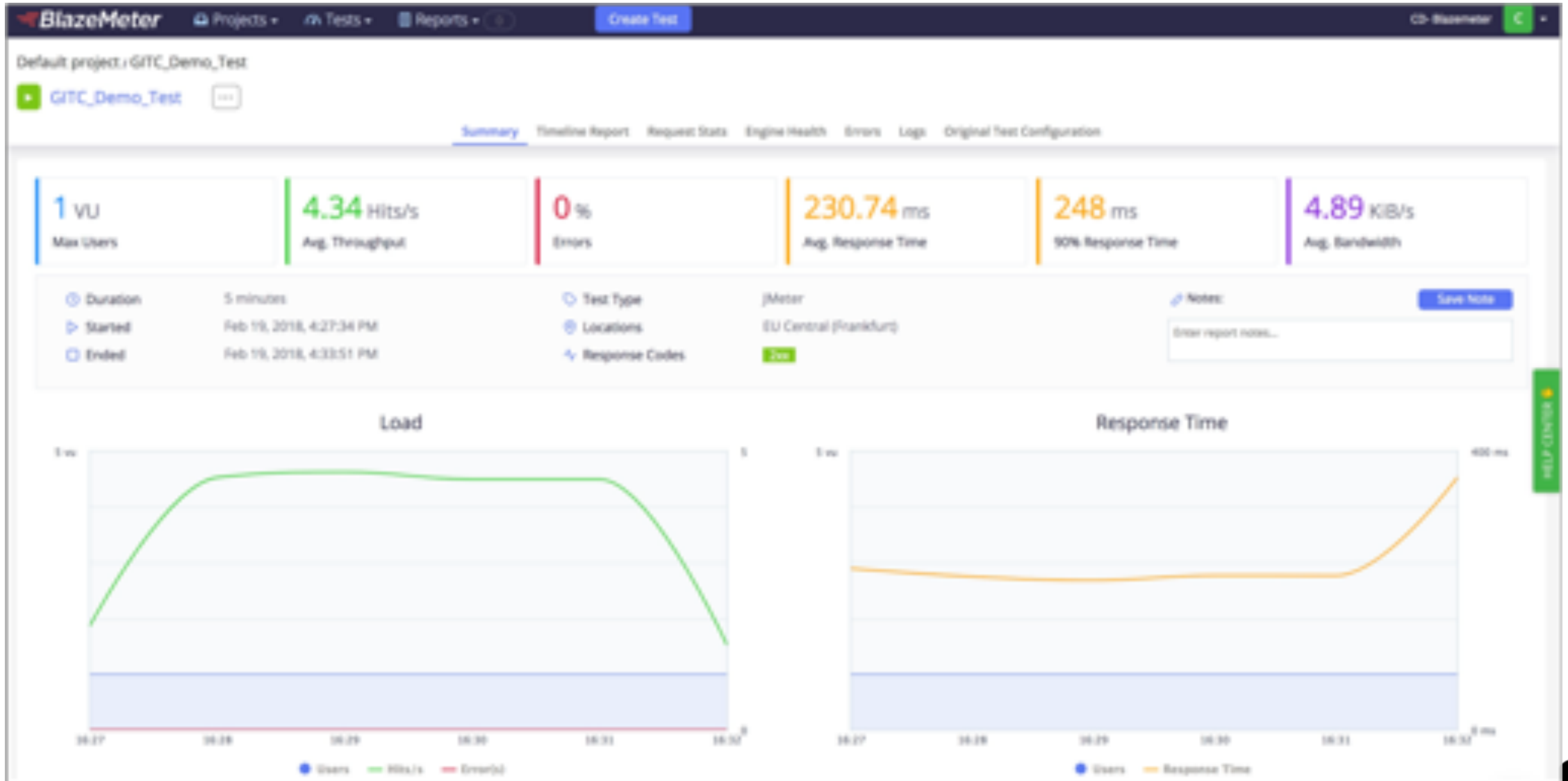
Testing

- Load tests
 - Distributed with automated created cloud instances as clients
 - JMeter compatible tests
 - Easy to use web interface
- Functional tests
 - Define expected responses
 - Define expected errors

Test workflows



Performance Testing

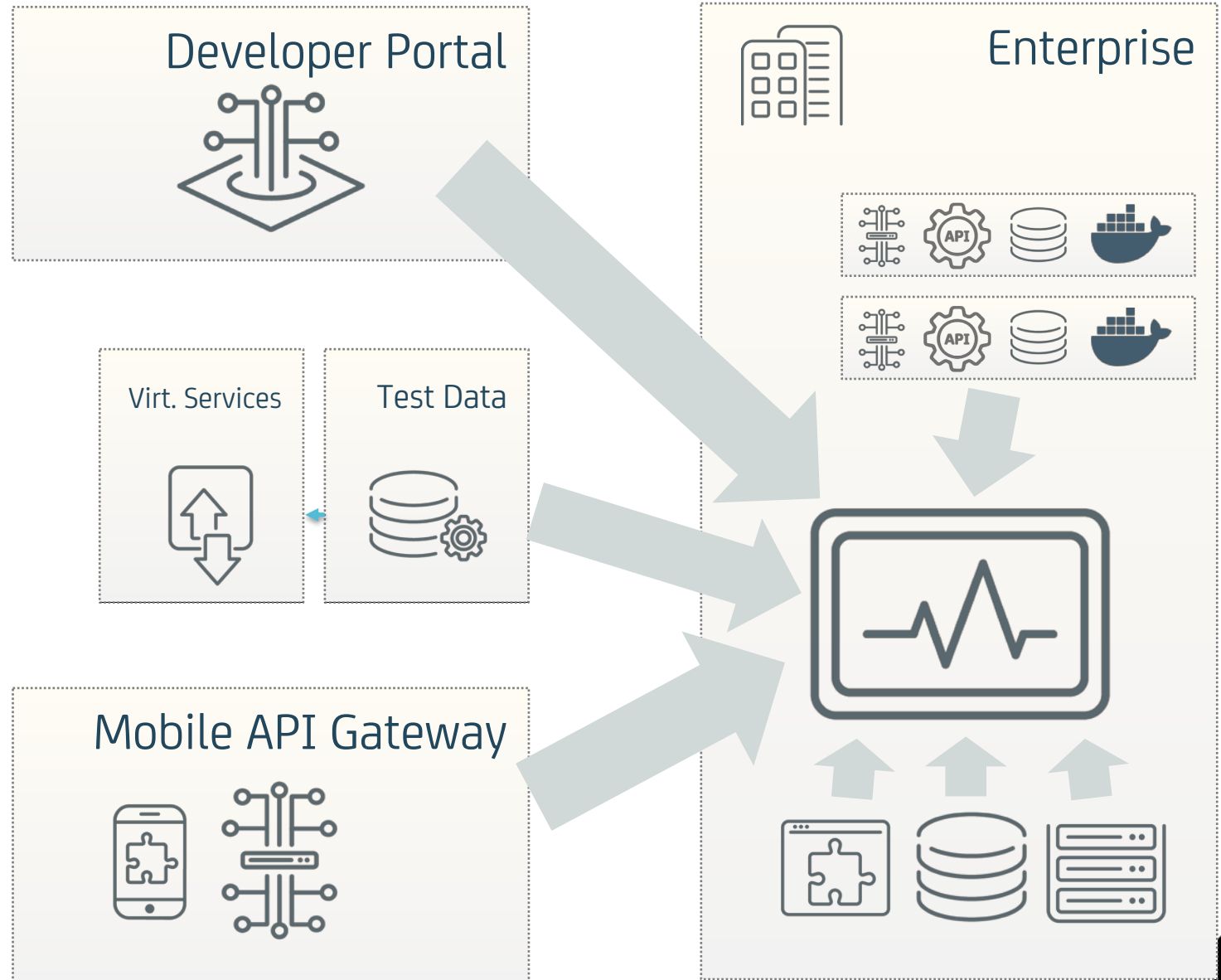


Performance Testing



Enterprise Monitoring

Monitoring



Enterprise Monitoring

- Application Performance Management, e. g.
 - Disk space
 - CPU usage
 - Database availability
 - ...
- Direct integration with gateway
 - Not only black box (“request took 1.598msec”) but instead
 - Deep inspection of policies (which assertion created the delay)
 - Directly send by gateway asynchronous

Dashboard navigation and filters. Includes a search bar and a 'Go to Page' button.

Executive Summary



Operational Performance

The Operational Performance section contains three main KPI cards and a right-hand sidebar:

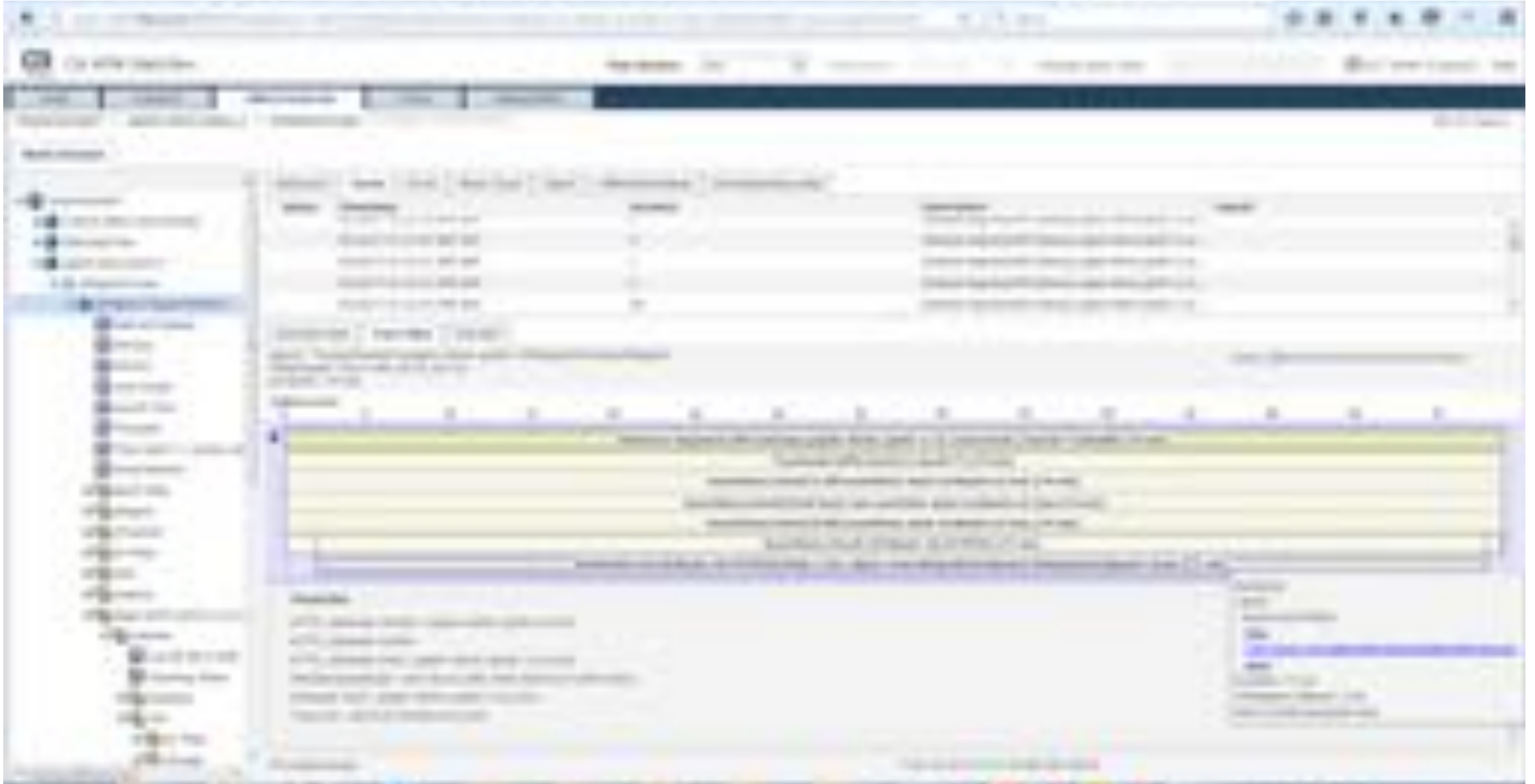
- KPI Card 1 (Left):** Titled 'Operational Performance', showing a value of '96' and a bar chart with a red trend line.
- KPI Card 2 (Middle):** Titled 'Operational Performance', showing a value of '100' and a bar chart with a red trend line.
- KPI Card 3 (Right):** Titled 'Operational Performance', showing a value of '0' and a bar chart with a red trend line.
- Right Sidebar:** Contains two dark blue header boxes with white text, followed by a list of items with small icons.

API Service Metrics

Service Metrics:
Front End Latency, Back-end Latency
Success Counts, Routing Failures, Policy
Violations

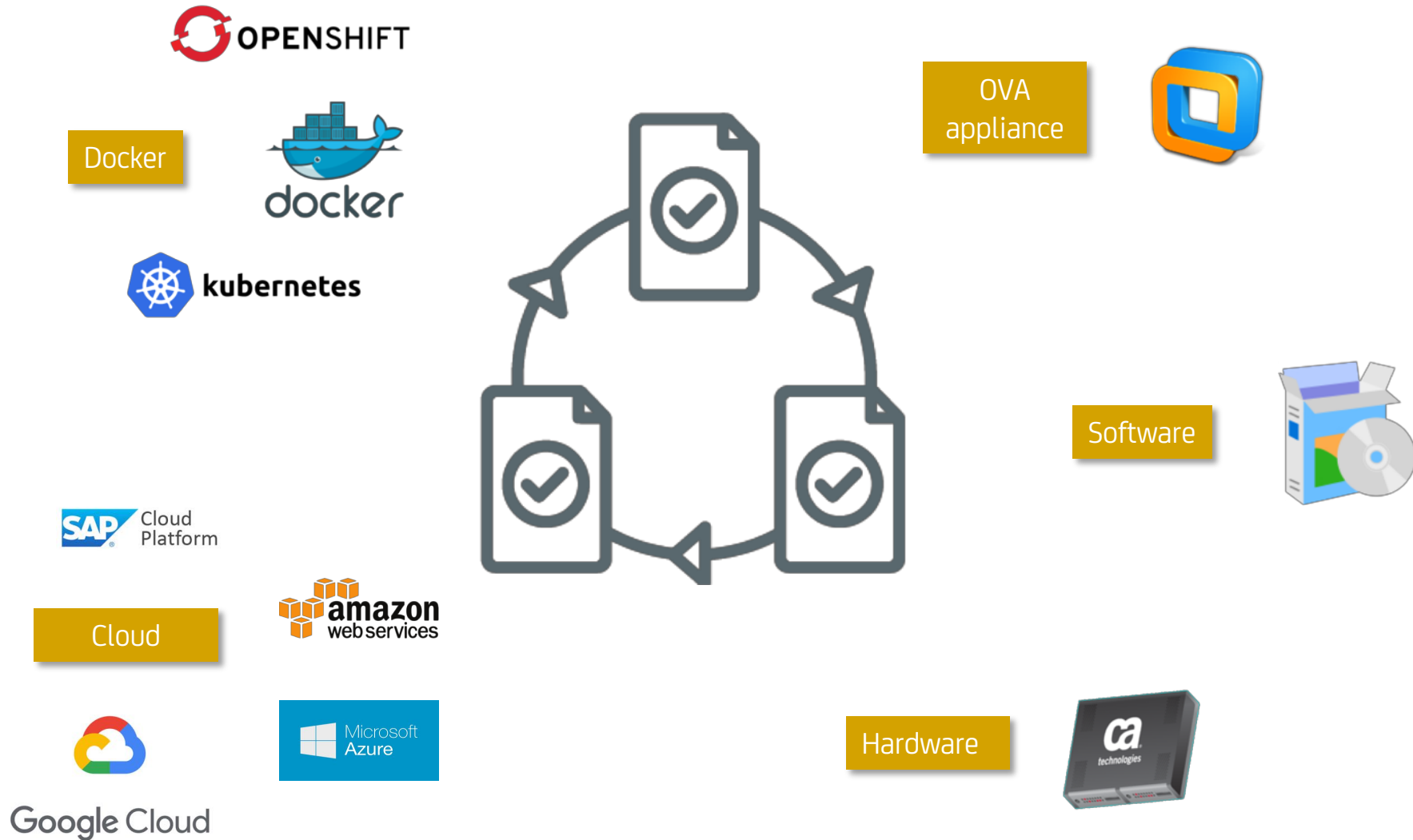


Transaction Traces – “Upside Down Wedding Cake”

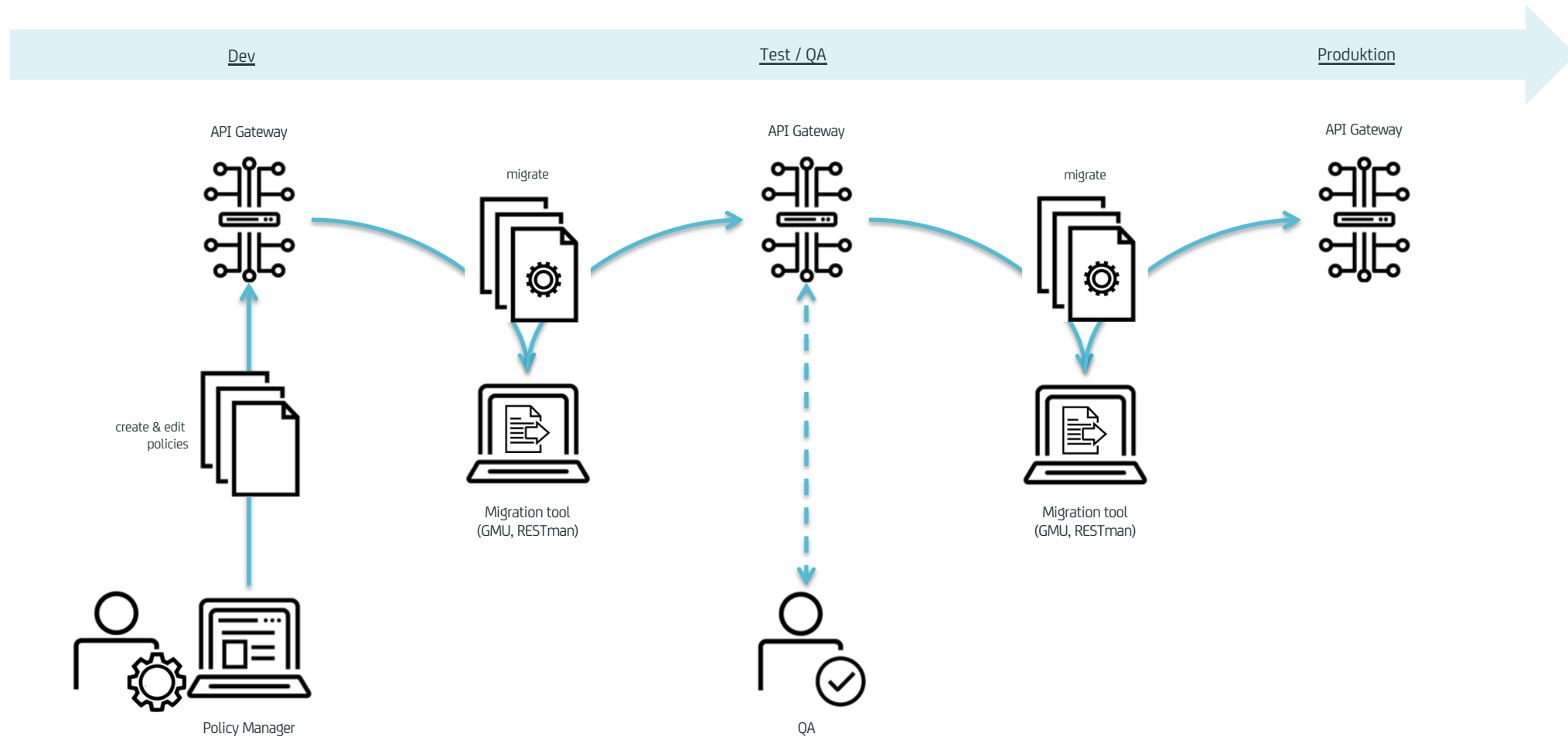


Deployment

Deploy everywhere



Deployment Workflow



Questions and Answers

Thank You.





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