

# API From Scratch to Live in an Enterprise Environment



@SVENWAL



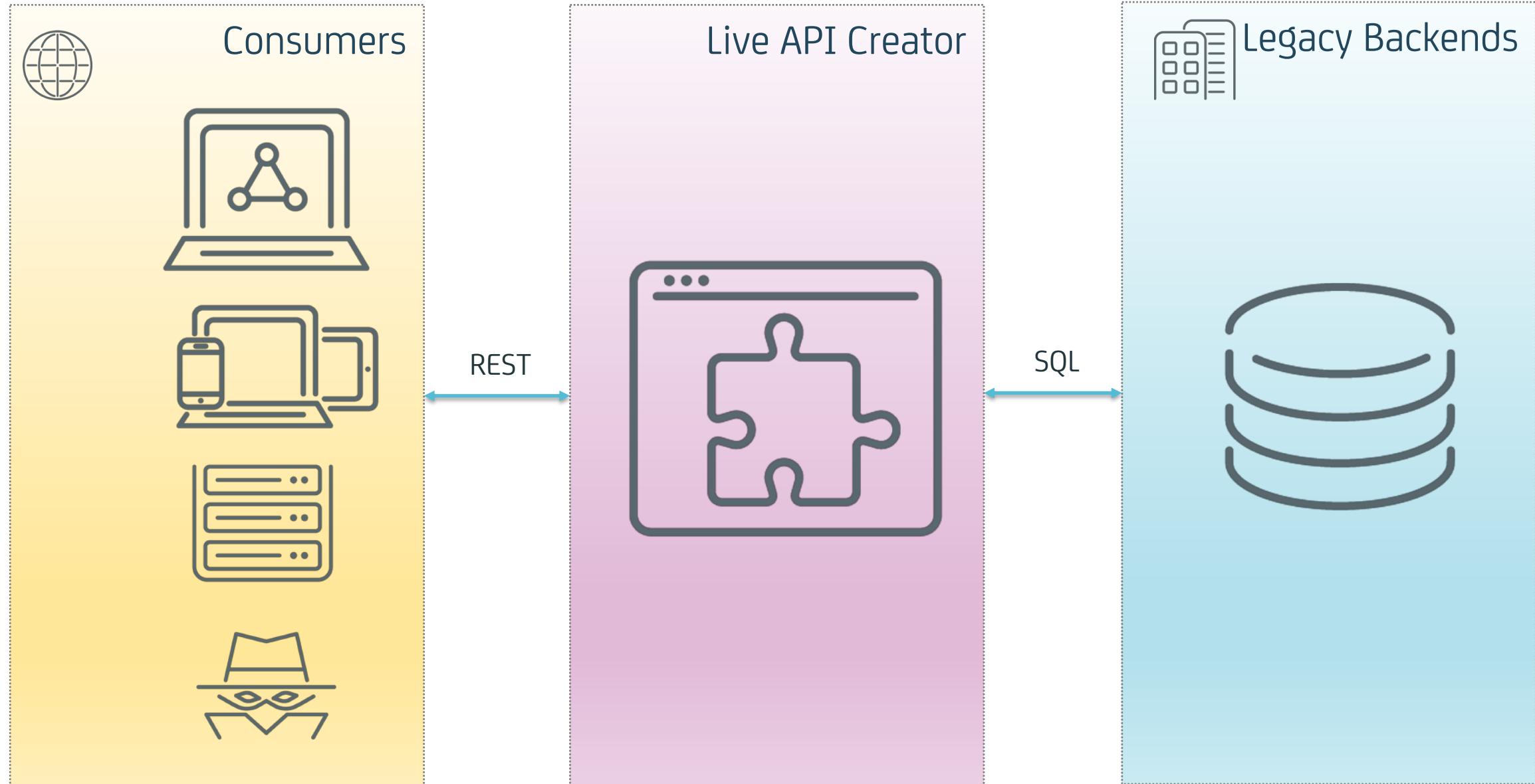
# Enterprise Use

# 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

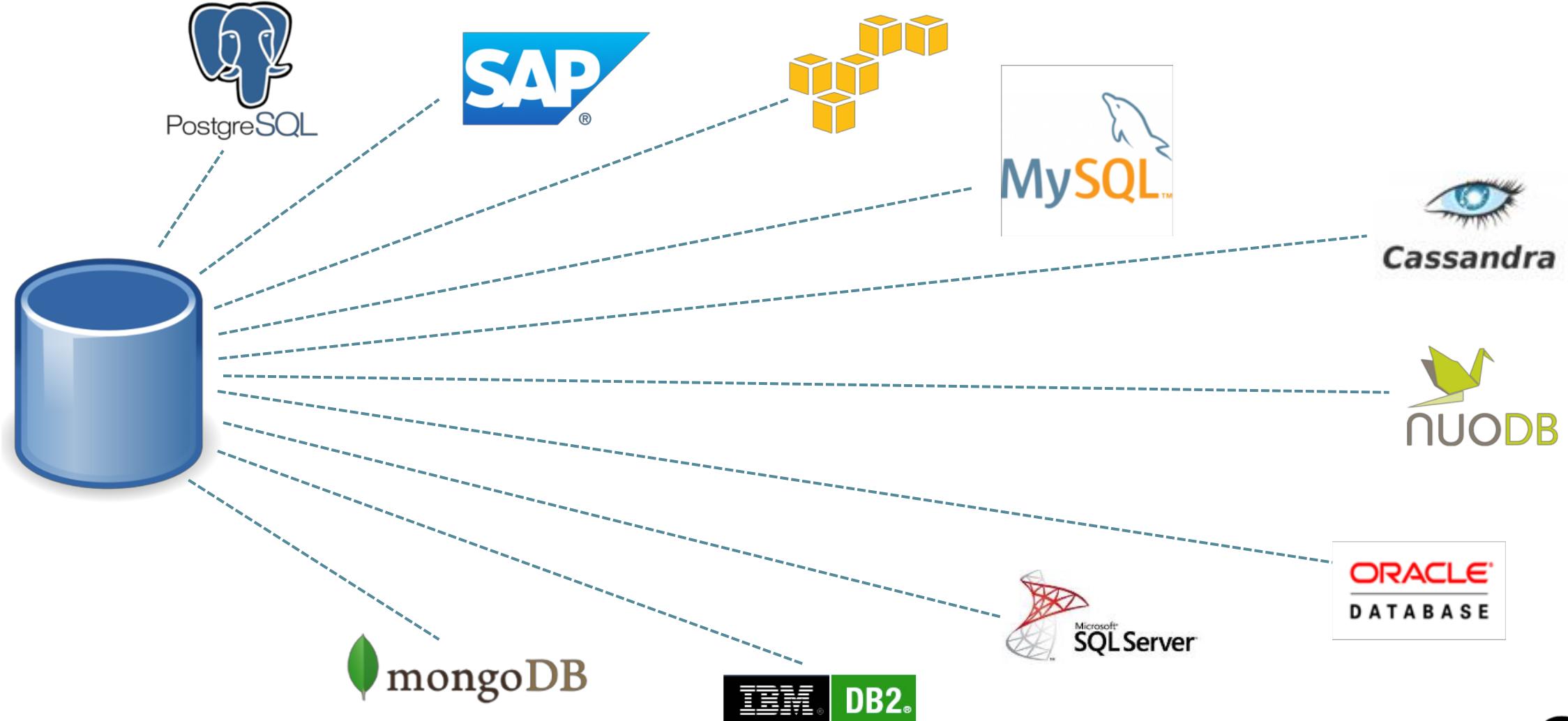
# API Creation – SQL & JavaScript





## CA Live API Creator

### CA API Management – 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

3. Connection

4. API Setup

**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

CA Live API Creator APIs API: Employee API

Request Te Summary Rule Summary

Endpoint: Table mainemployees ADD API version: v1 Auth Token: Admin key

GET POST PUT DELETE http://dev.ca.com:8282/test/default/employees/v1/mainemployees

?rulesummary=false&bsummary=false&nometa=true

Page Size: ADD FILTER

Include Rule Summary:

Include Transaction Summary:

Exclude Metadata:

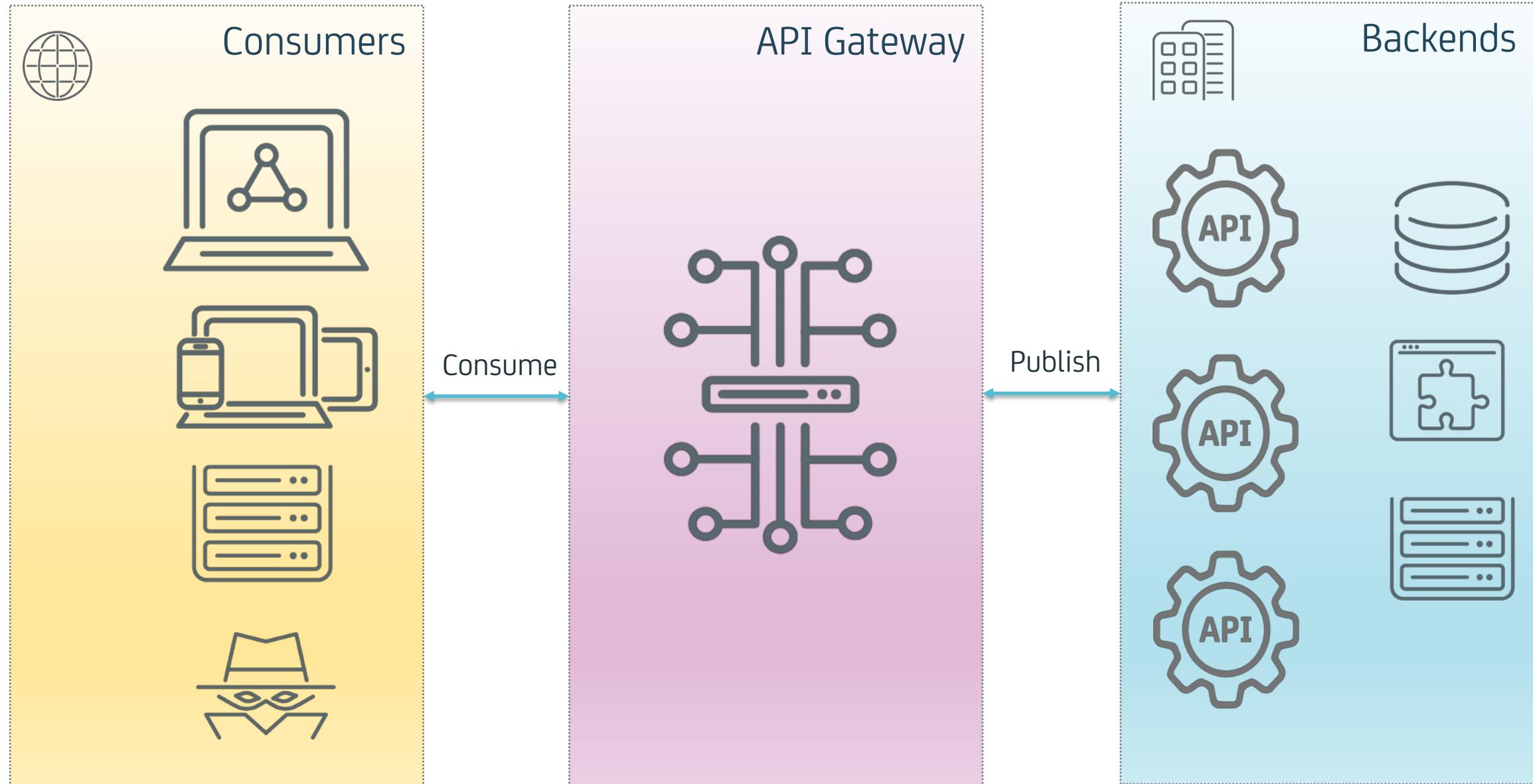
Response Format: omit

Request Content-Type: application/json

1 [ {  
2 "emp\_no": 10001,  
3 "birth\_date": "1953-09-02",  
4 "first\_name": "Georgi",  
5 "last\_name": "Facello",  
6 "gender": "M",  
7 "hire\_date": "1988-06-28"  
8 },  
9 {  
10 "emp\_no": 10002,  
11 "birth\_date": "1964-06-02",  
12 "first\_name": "Bezalel",  
13 "last\_name": "Simmel",  
14 "gender": "M",  
15 "hire\_date": "1985-11-21"  
16 },  
17 {  
18 "emp\_no": 10003,  
19 "birth\_date": "1959-12-03",  
20 "first\_name": "Pinto",  
21 "last\_name": "Maia",  
22 "gender": "M",  
23 "hire\_date": "1986-08-28"  
24 },  
25 {  
26 "emp\_no": 10004,  
27 "birth\_date": "1954-05-21",  
28 "first\_name": "Chantel",  
29 "last\_name": "Kohler",  
30 "gender": "M",  
31 "hire\_date": "1986-12-01"  
32 },  
33 ]

# API Gateway

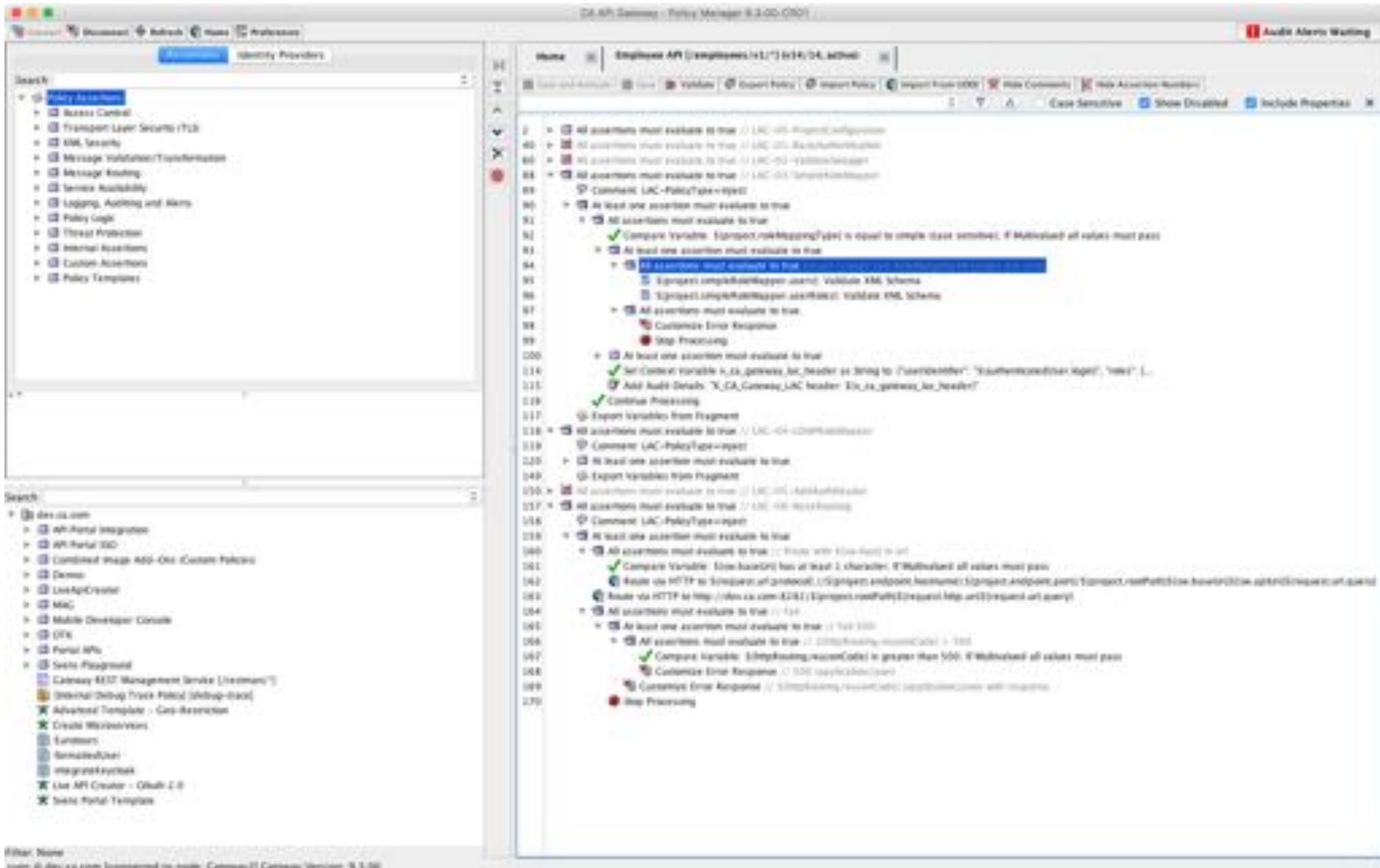
# API Gateway - The Core



# API Gateway – Main Functions

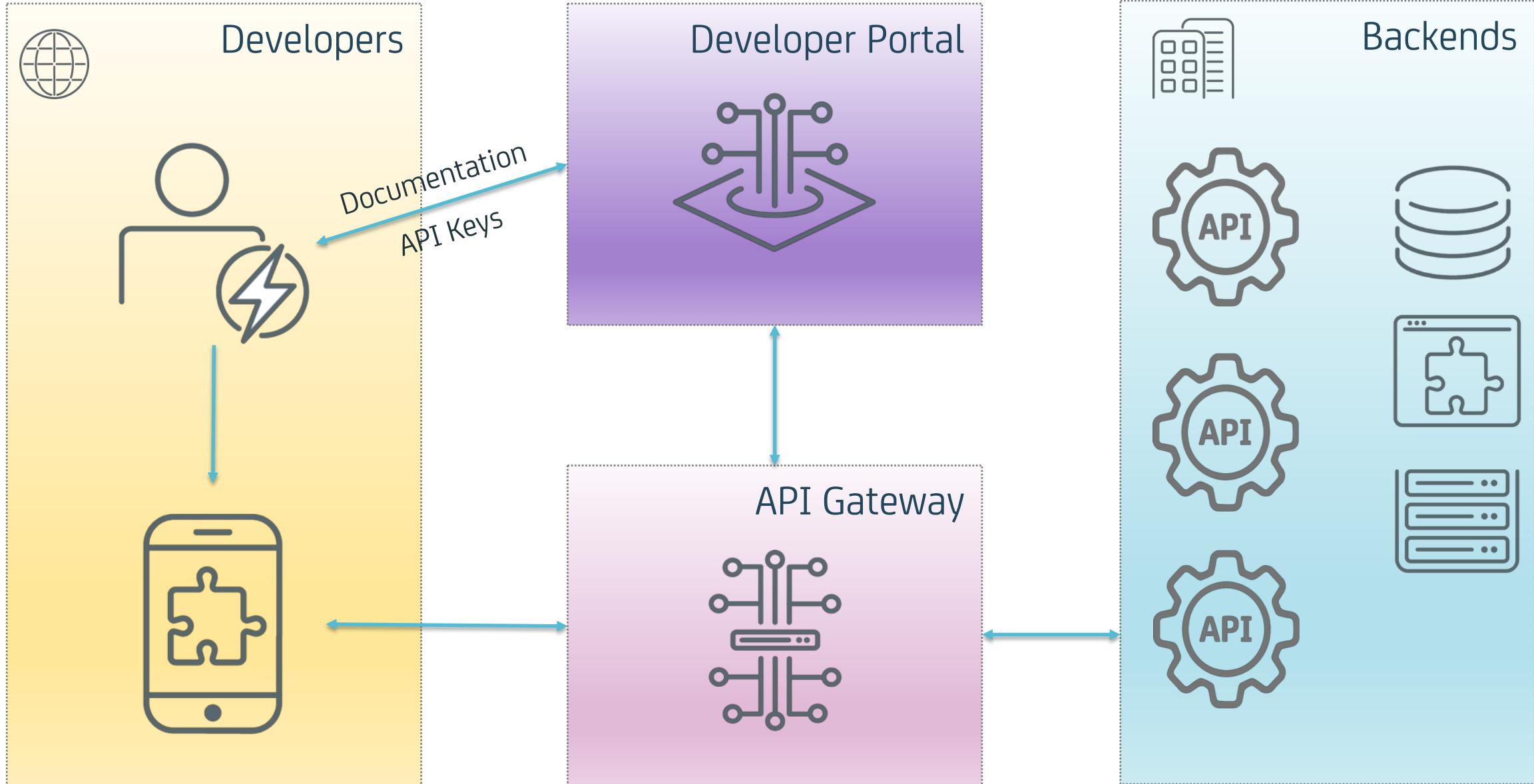
- Security, Security, Security – did I mention Security...?
  - Authentication
  - Message security (SQL, JavaScript, ...)
- Rate limits and quotas
- Integration / orchestration
- Mediation
- Caching

# CA Policy Manager



# 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 CA logo with the text "Developer Portal". To the right are search, sign-up, and login buttons. The main heading "The Power of API Management" is centered above a subtext: "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 is a large, light-gray callout box containing the text "Publish APIs" and a detailed description of the Add API Wizard. It includes a "View Documentation" link and a "How to publish an API" section with a video thumbnail and a "Play Video" button. Further down the page, another callout box contains a key icon and the text "How to get an API key" with a "Play Video" button. The bottom right corner features the CA technologies logo.

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](#)

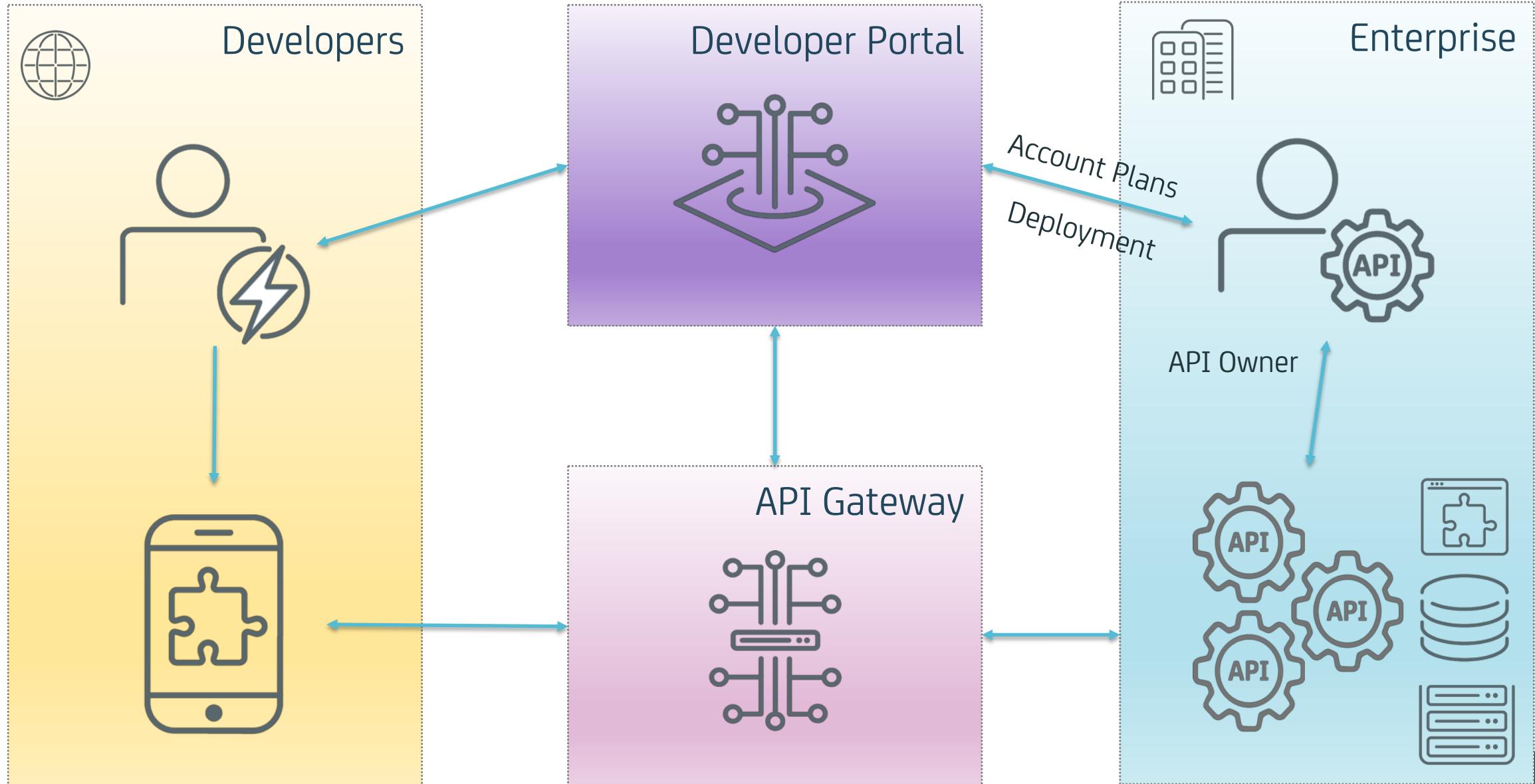
[How to get an API key](#)  
[Play Video](#)

**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.

# API Management

# API Management



# API Management- Main Functions

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

# API Publishing

The screenshot shows the 'Publish an API' page in the API Publisher interface. On the left, there's a sidebar with tabs: 'API Definition' (selected), 'API Details', 'Proxy Configuration', and 'API Explorer'. The main area has two sections: 'Proxy Details' and 'Policy Templates'.

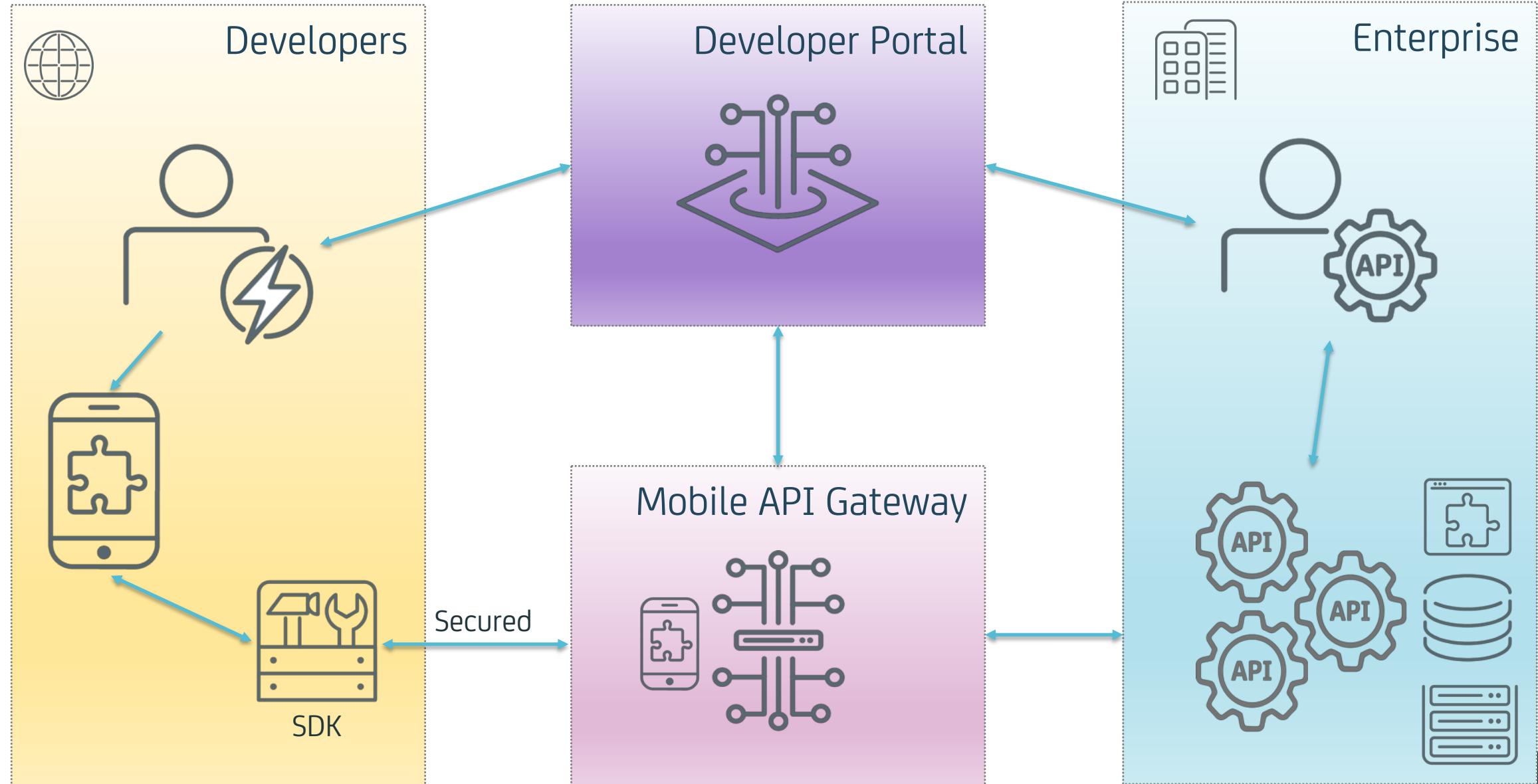
**Proxy Details:** Shows 'Proxy URL' as `https://www.ca.com:8443` and 'Root' as `/boom`. A note says 'Port 8443 is the default port'. To the right is a sidebar titled 'How do I publish an API?' with four numbered steps:

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

**Policy Templates:** Shows two items: 'Standard Policy Template - OAuth 2.0' and 'Rate Limit'. Each item has a 'Remove' button. Below the 'Rate Limit' section, it says 'Rate limit requests to the specified limit.' and 'Maximum requests per second [value greater than zero] \*' with a value of '1.0'. A note says 'Value must be a whole number.' At the bottom, there's a 'Rate limit' dropdown set to '1.0' and a blue 'Add' button.

# 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   Features   Docs   Blog   Videos   Support  
CA Mobile API Gateway

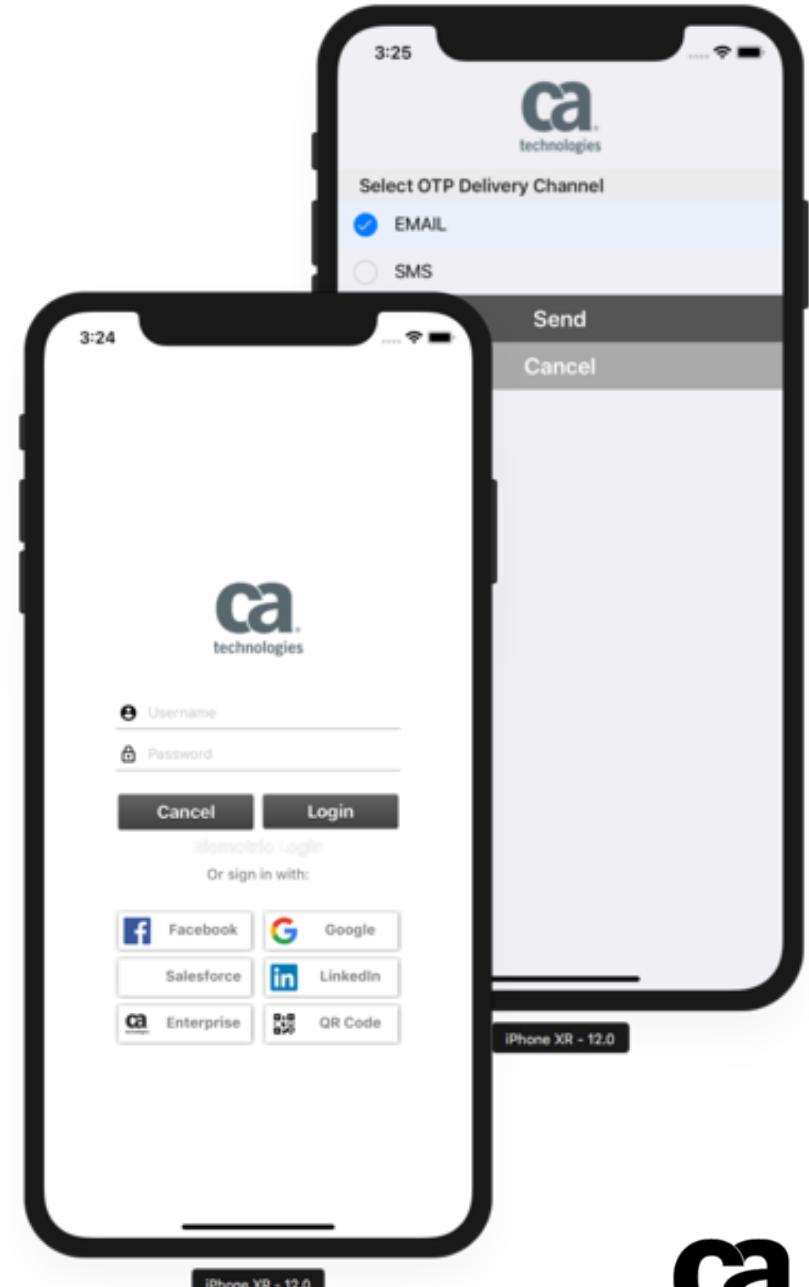
## Documentation

Mobile SDK for CA Mobile API Gateway v1.8.00

### For Developers

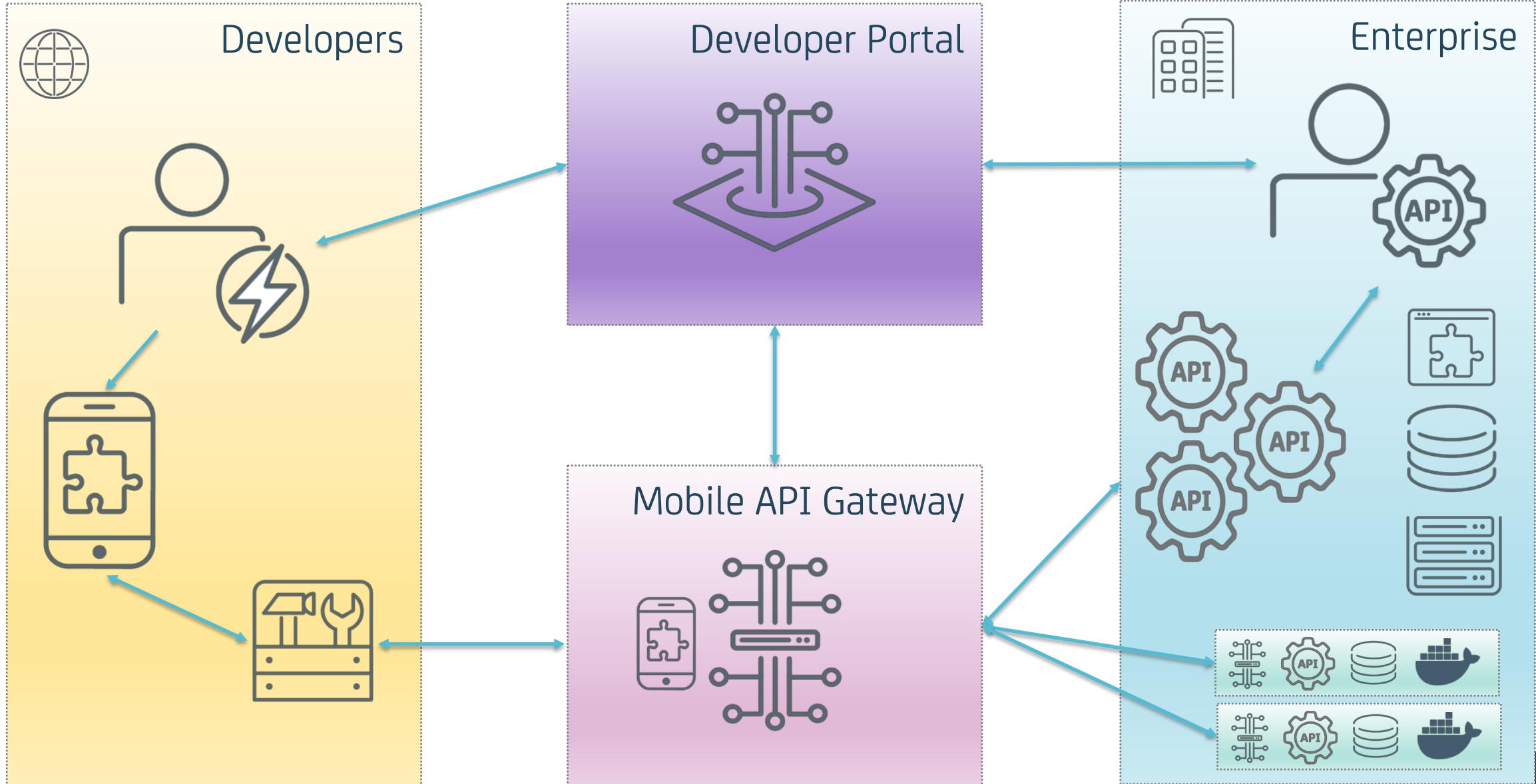
- CLIENT iOS [Guides >](#) [Reference >](#)
- CLIENT Android [Guides >](#) [Reference >](#)
- CLIENT Cordova [Guides >](#) [Reference >](#)
- CLIENT Xamarin [Guides >](#) [Reference >](#)
- SERVER CA Mobile API Gateway (MAG) [Guides >](#)

+ Previous Versions



# Microgateway

# Microgateway

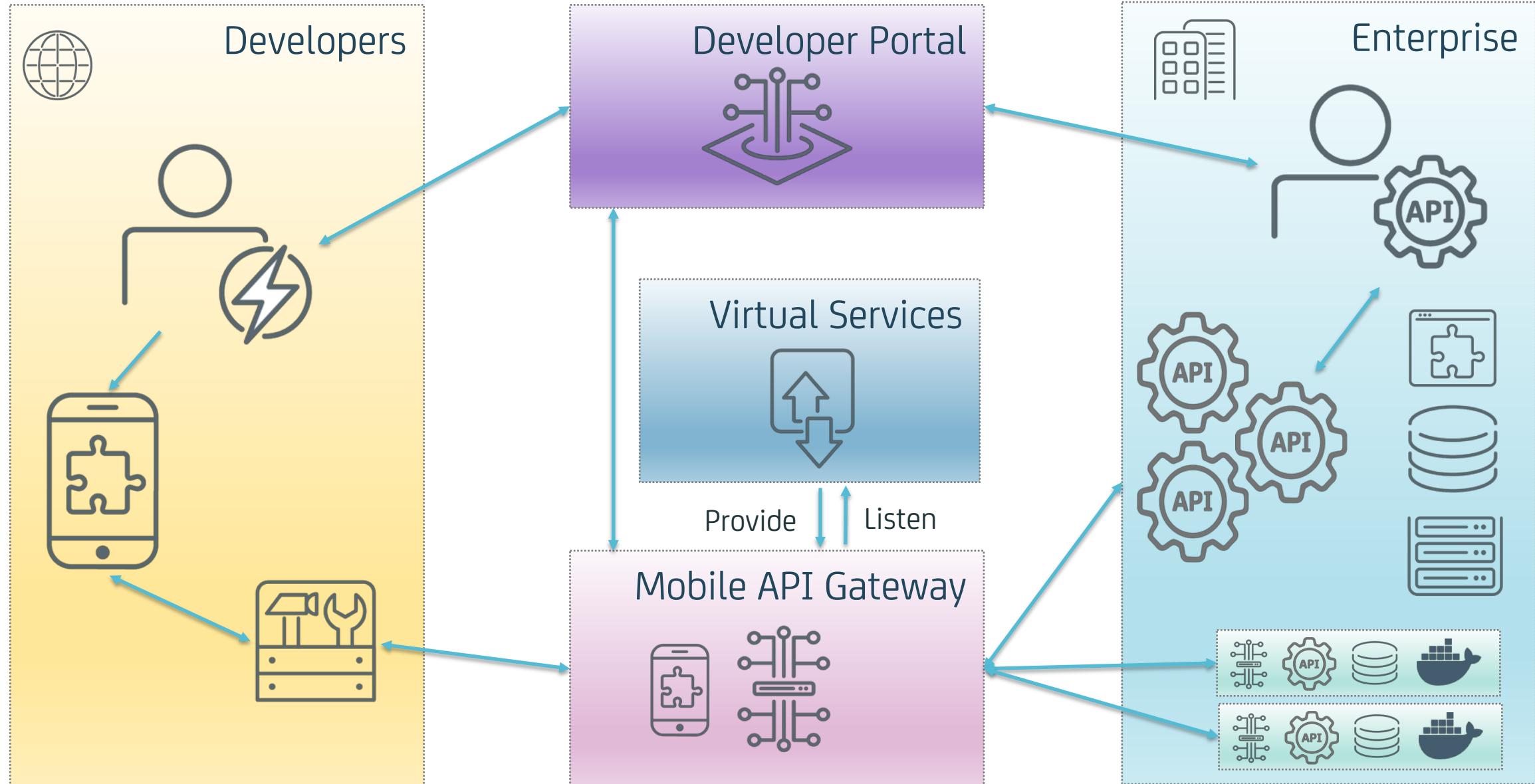


# Microgateway

- 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

Dev/Test Portal

Current Project: VTS

Recording Information

Selected VTS Server: VTS

Description: test

Protocol: HTTP

Recording Name: test

Advanced Mode: On

Save Draft

HTTP Transport Protocol

Record Configure Save

Client —> VS Recorder —> Server

User SSL: All, ZTMS, User SSL: localhost:8083

Do not modify host header parameter received from client

Start Recording

This screenshot shows the CA Dev/Test Portal interface for managing Virtual Services. The left sidebar has a 'Create' section with options like API Test, Virtual Service, and Copybook Bundle, and a 'Manage' section with Monitor, Application Insight, Reporting, and Settings. The main area is titled 'Recording Information' and shows a 'Selected VTS Server: VTS'. It includes fields for 'Recording Name' (set to 'test'), 'Description' (set to 'test'), and 'Protocol' (set to 'HTTP'). An 'Advanced Mode' toggle is turned on. Below this is the 'HTTP Transport Protocol' section, which has three steps: Record (highlighted in blue), Configure (in light green), and Save (in light green). A flow diagram illustrates the connection: Client connects to VS Recorder (represented by a box with a 'VS' logo), which then connects to Server. Under 'HTTP Transport Protocol', there are dropdowns for 'User SSL' (set to 'All') and 'ZTMS', and a 'User SSL' field set to 'localhost:8083'. At the bottom, there's a checkbox for 'Do not modify host header parameter received from client' and a large 'Start Recording' button.

# Virtual Services

The screenshot shows the CA Dev/Test Portal interface. The left sidebar includes links for Home, Create, API Test, Virtual Service, Copybook Bundle, Manage, Monitor, Tests, Virtual Service Environments (with a notification badge), VSE, Server Health, CVS, Application Insight, Reporting, and Settings.

The main area displays a summary of Virtual Services and Recordings. The Virtual Services summary shows 4 total services, 4 running, 0 offline, and 0 fail. The Recordings summary shows 0 total recordings, 0 recording, 1 offline, and 0 fail. Below these are two tables:

**Virtual Services**

Actions	Category	Name	Resource Type	Status	Total Count	Uptime	Errors	Group	Execution Mode	Capacity	Thick Scale	Auto-Restart
		test	HTTP.GATEWAY	Offline			1					
		getServiceDetailsBySite	Http - Asynchronous	Running	0	0-days 00:10:20			Most Efficient	3	100	Enabled
		RequestFulfillment_1.0	Http - Asynchronous	Running	0	0-days 00:10:20			Most Efficient	3	100	Enabled
		ProcessOrderRequest_1.0	Http - Asynchronous	Running	0	0-days 00:10:20			Most Efficient	3	100	Enabled
		GetFulfillmentAddress_1.0	Http - Asynchronous	Running	0	0-days 00:10:20			Most Efficient	3	100	Enabled

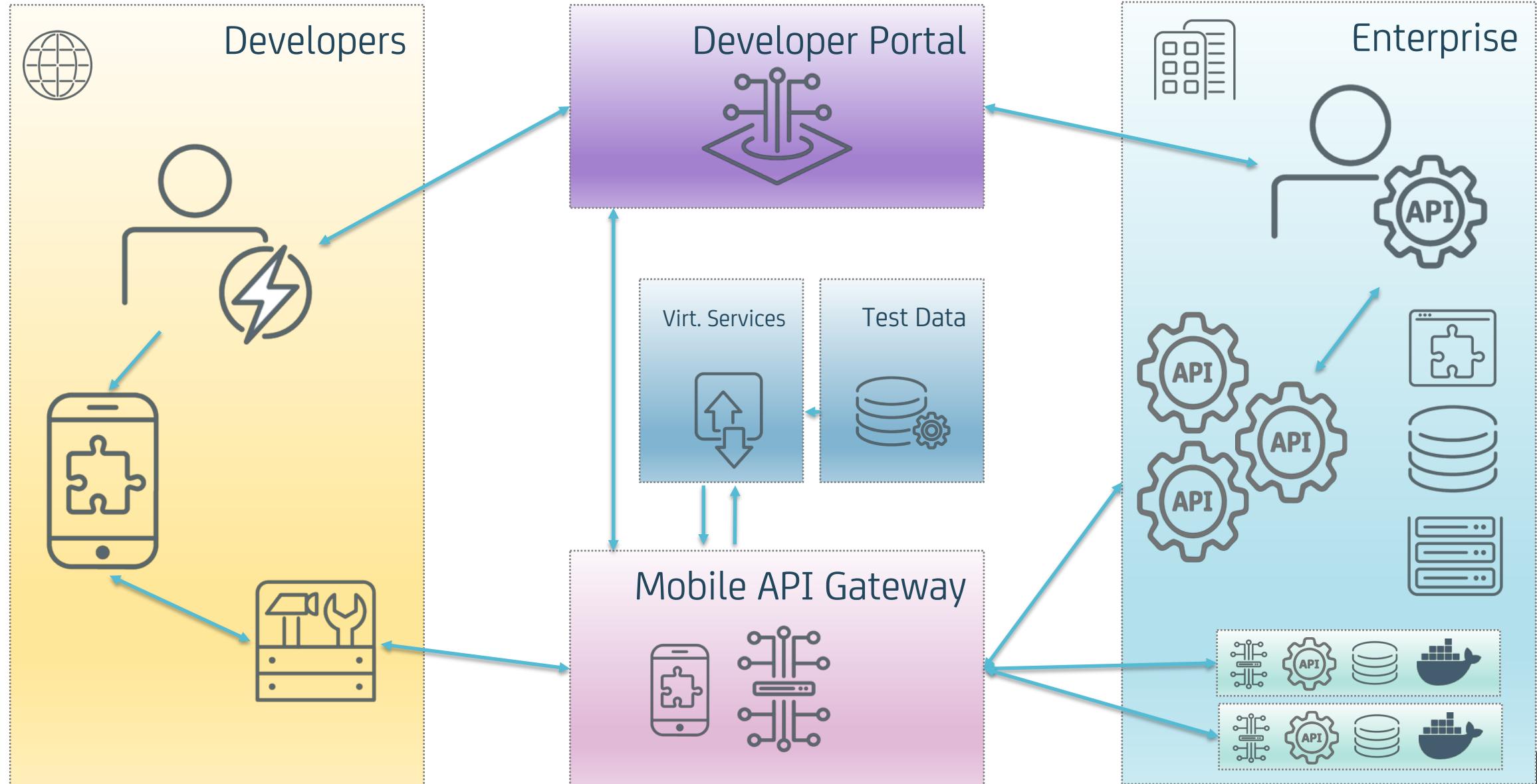
**Recordings**

Actions	Category	Name	Resource Type	Status	Total Count	Uptime	Errors	Group	Execution Mode	Capacity	Thick Scale	Auto-Restart

At the bottom, there are navigation buttons for page size (14, 40, 1, 10, 20) and items per page, and a footer note: "Last Refreshed: 06/25/2018 7:21:48 PM Auto Refresh 15".

# 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

Test Data Manager Portal

Project: TDM001 (1.0) administrator

- Modeling
- Data Profiling
- Generators
- Orchestration
- Self-Service Flows
- Self-Service Catalog
- Submitted Requests
- My Reservations
- My Clones
- uTDM
- Configuration

Welcome to CA Test Data Manager Portal.

Below are some simple steps to get you started.

Projects and Versions

1 Create a project and version, or select an existing one.

Click Project Manager  in the top-right of the page, New Project, and name the project and first version. Now you're ready to start modeling your data.

2 Data Modeling and Data Generation

Model your data and then generate

Model your data by registering files such as XSD or XML, and then deriving tables from the structures found in the files. After modeling your data 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.

Allow your testers to find and generate test data themselves via intuitive request forms that you make available in the Self Service Catalog.

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.

Here you'll find links to specific information about CA Test Data Manager Portal concepts, features, architecture and processes.

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

Test Data Manager Portal

Project: ITIMex [1.0] administrator

Modeling > Data Profiling

Results Job 640

39 PE items found 15/99 Tables confirmed  Zoom:

ACTIONS

Filter: Filter search results. All search filters active.

Risk: Very High, High, Medium, Low, Very Low, Not FLC

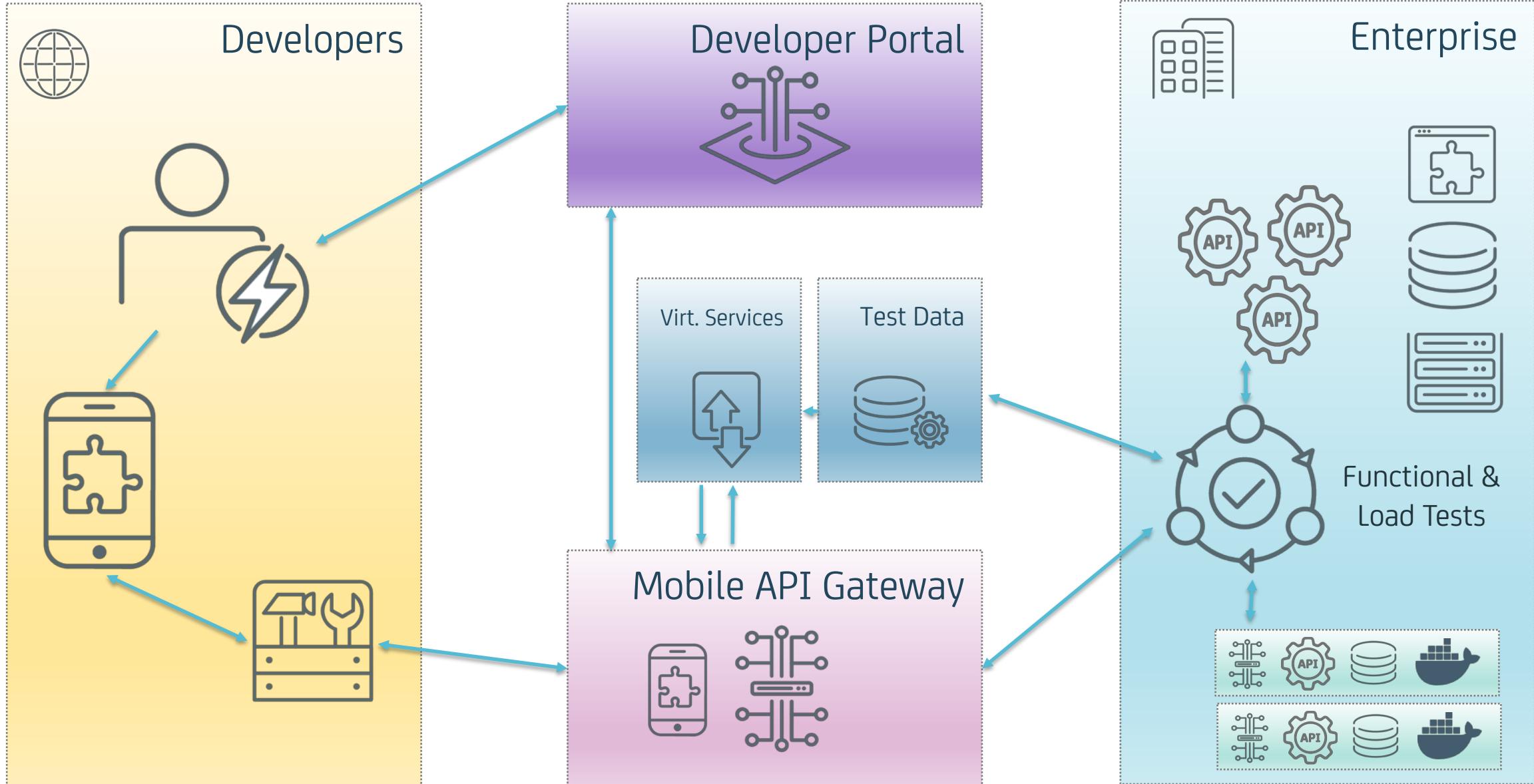
Table Selection: No table selected. Select a table to review.

Row 1	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9
PE 1	Low								
PE 2	Medium								
PE 3	Low								
PE 4	Low								
PE 5	Low								
PE 6	Low								
PE 7	Low								
PE 8	Low								
PE 9	Low								
PE 10	Low								
PE 11	Low								
PE 12	Low								
PE 13	Low								
PE 14	Low								
PE 15	Low								
PE 16	Low								
PE 17	Low								
PE 18	Low								
PE 19	Low								
PE 20	Low								
PE 21	Low								
PE 22	Low								
PE 23	Low								
PE 24	Low								
PE 25	Low								
PE 26	Low								
PE 27	Low								
PE 28	Low								
PE 29	Low								
PE 30	Low								
PE 31	Low								
PE 32	Low								
PE 33	Low								
PE 34	Low								
PE 35	Low								
PE 36	Low								
PE 37	Low								
PE 38	Low								
PE 39	Low								

Actions: EXPORT, PRINT REPORT, NOTE TO, BACK, CREATE REPORT

# Automated Testing

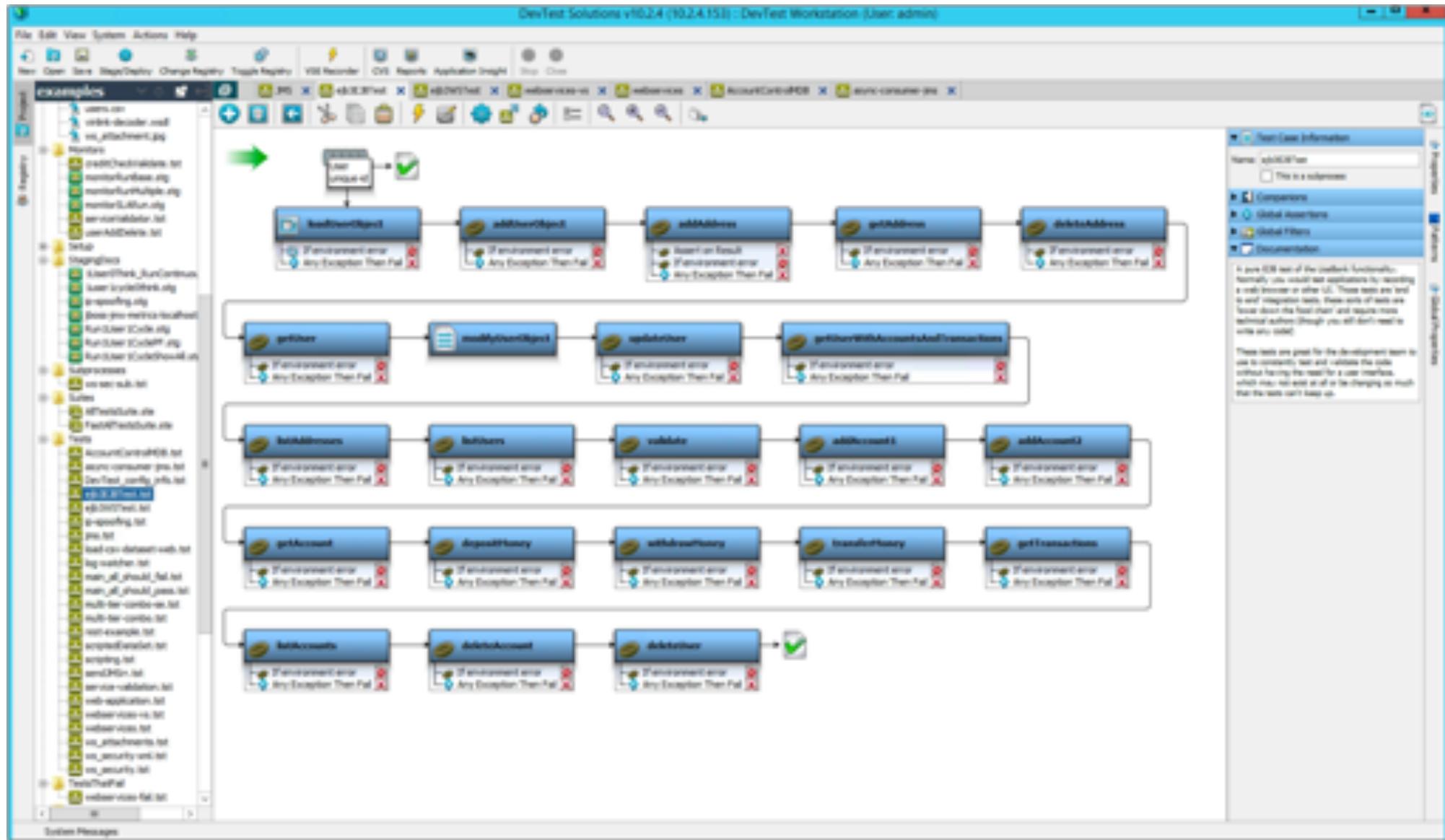
# Test Data Management



# 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 worflows



# Performance Testing

BlazeMeter Projects Tests Reports Create Test CD-Maven C

Default project: GTC\_Demo\_Test

GTC\_Demo\_Test

Summary Timeline Report Request Stats Engine Health Errors Logs Original Test Configuration

1 VU Max Users | 4.34 Hits/s Avg. Throughput | 0 % Errors | 230.74 ms Avg. Response Time | 248 ms 90% Response Time | 4.89 Kib/s Avg. Bandwidth

Duration: 5 minutes | Test Type: Meter  
Started: Feb 19, 2018, 4:27:34 PM | Locations: EU Central (Frankfurt)  
Ended: Feb 19, 2018, 4:33:51 PM | Response Codes: 2xx

Notes: Enter report notes... Save Note

Load

Response Time

Users Hits/s Errors(s)

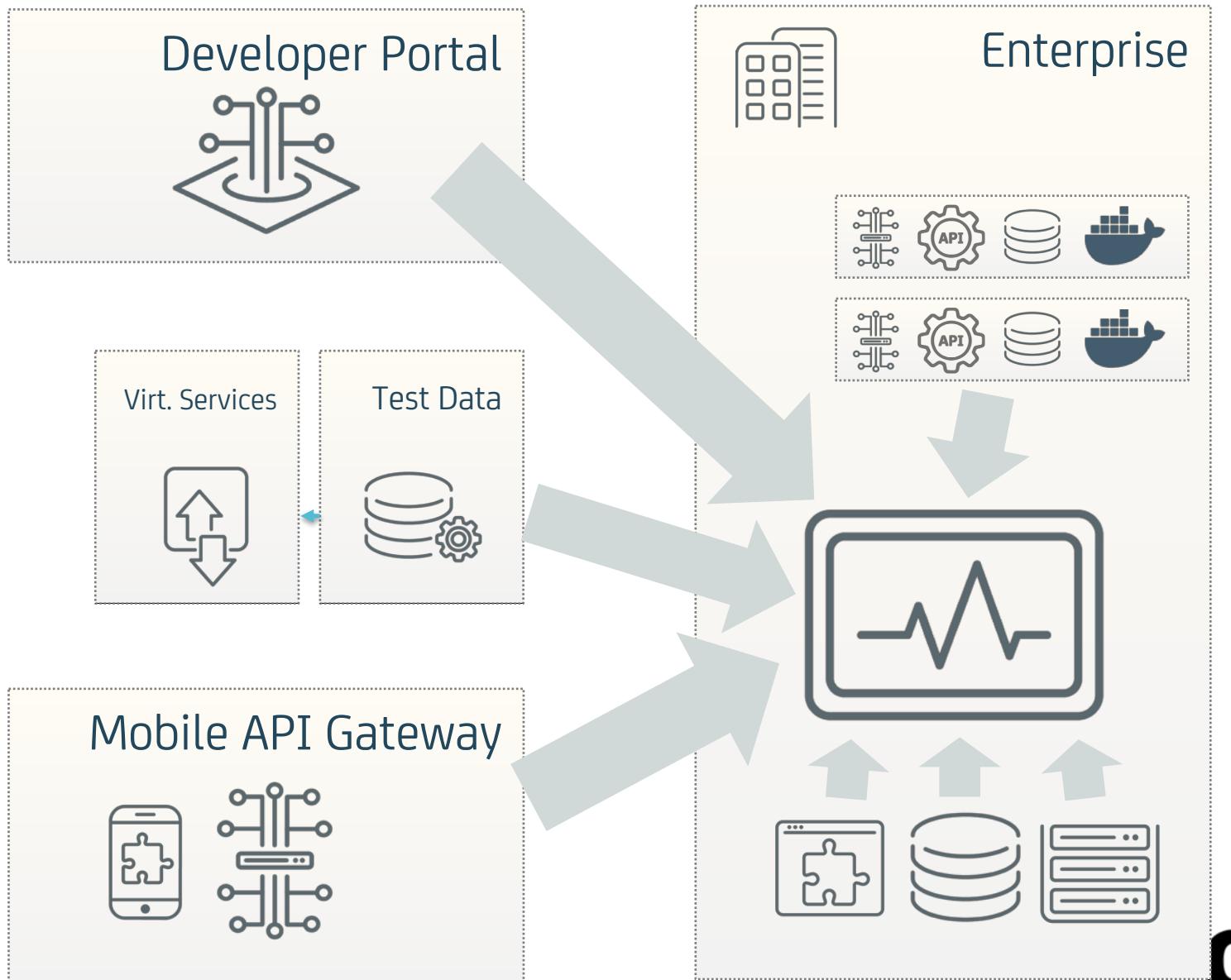
400 ms

# 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



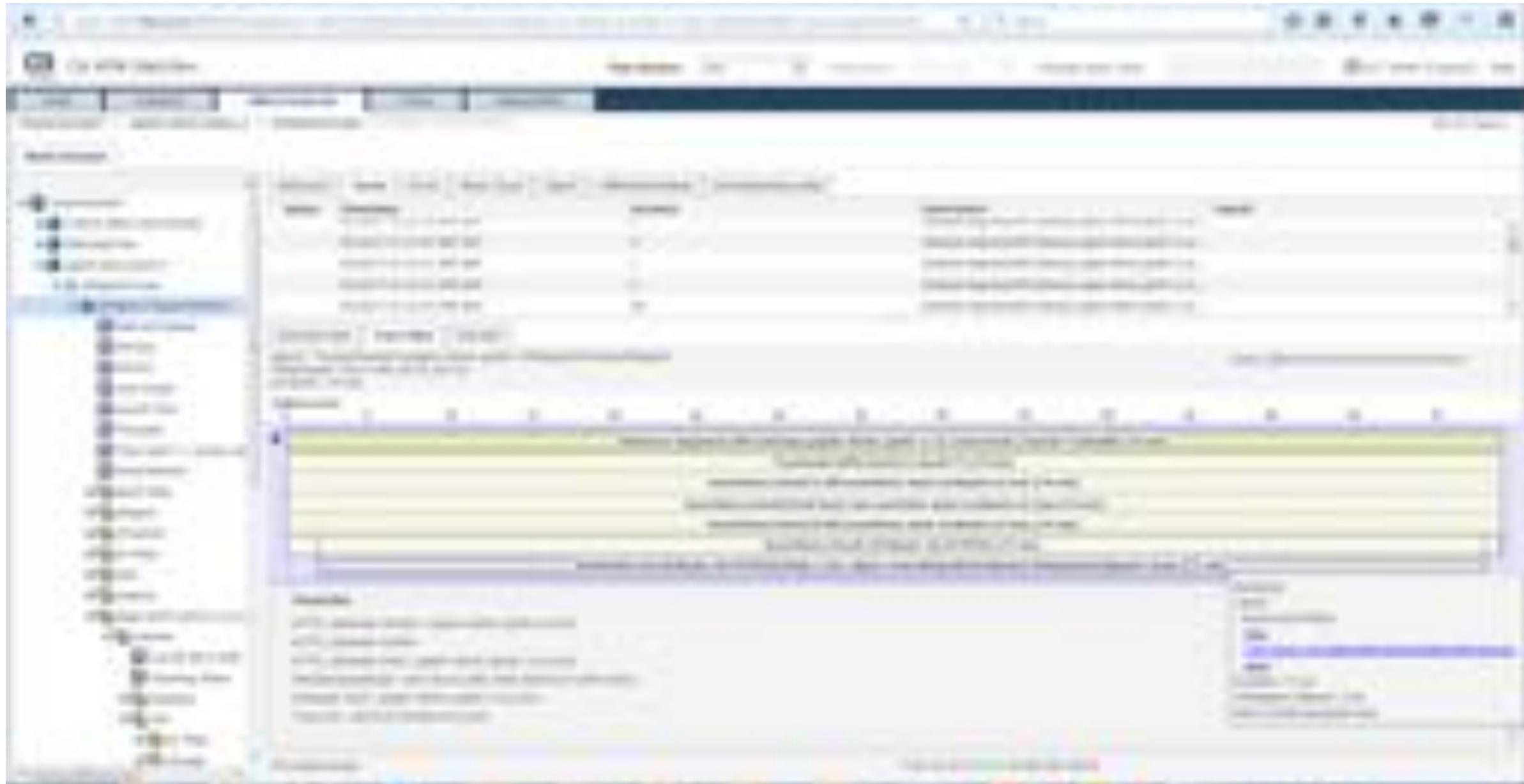
# API Service Metrics

## Service Metrics:

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

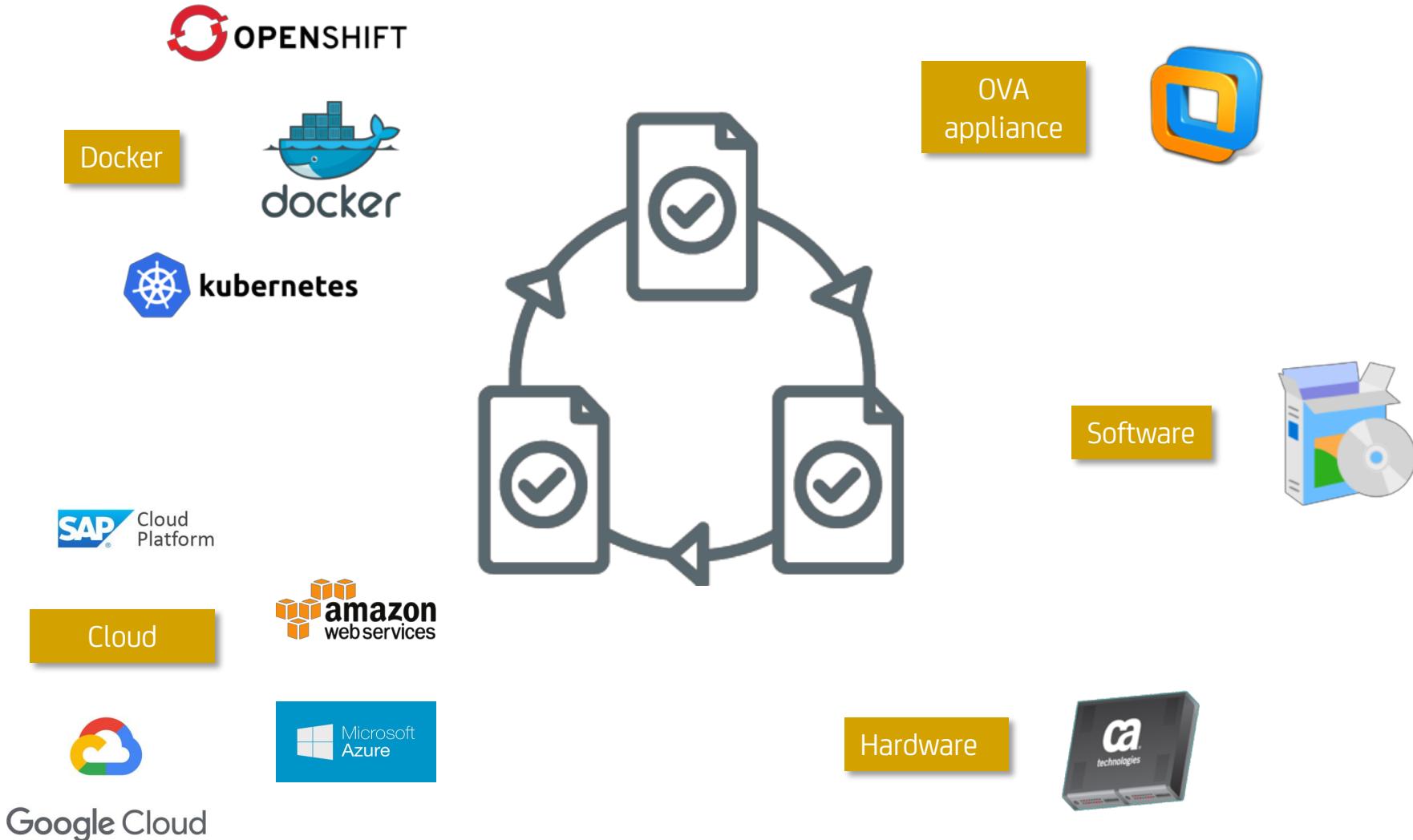


# Transaction Traces – “Upside Down Wedding Cake”

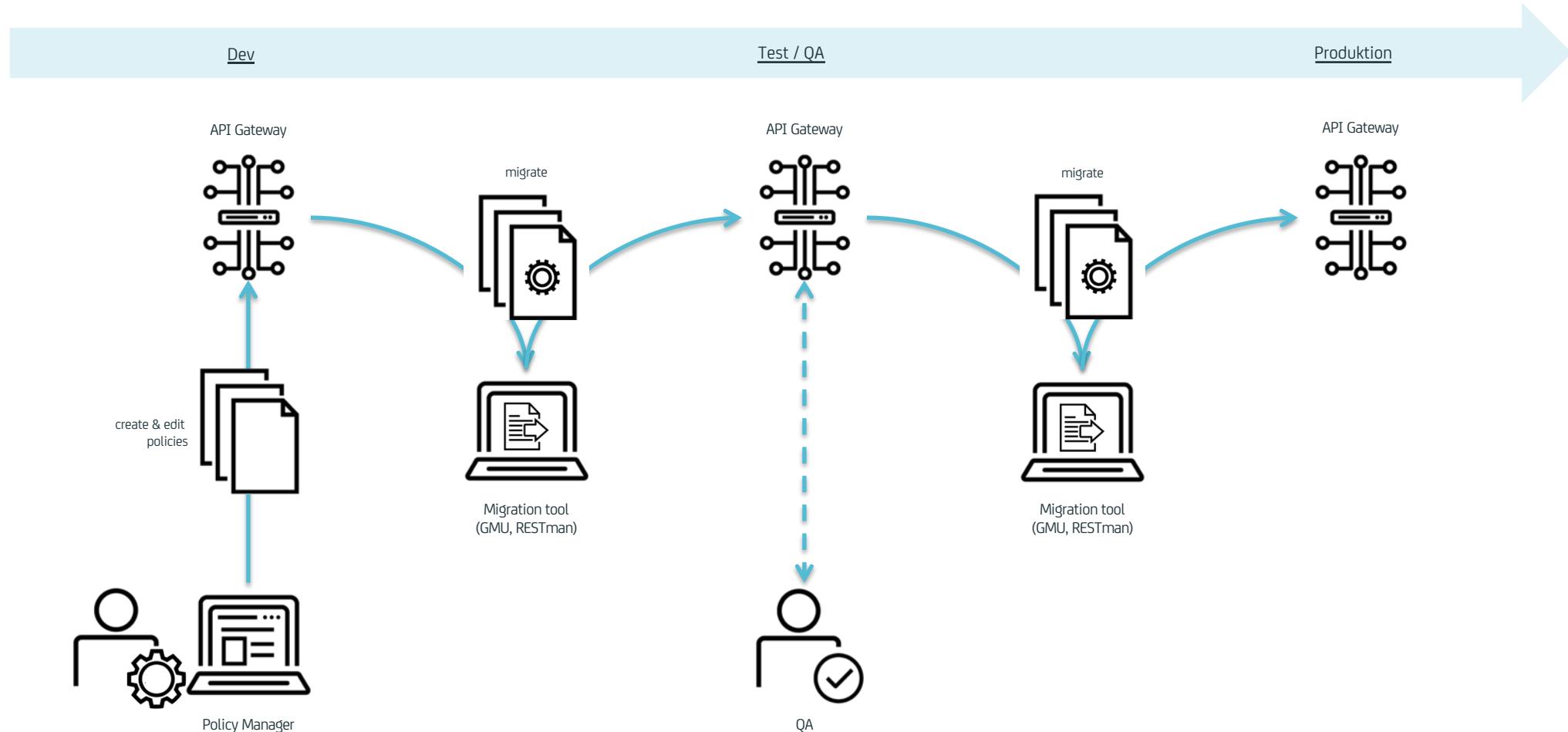


# Deployment

# Deploy everywhere



# Deployment Workflow



# Questions and Answers

# Thank You.





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[linkedin.com/in/svenwal/](https://linkedin.com/in/svenwal/)



<https://github.com/svenwal>

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Slides at <https://bio.Walther.world>