# APIM 4.0 Analytics

Via Choreo Insights

v1.0

# Hello!


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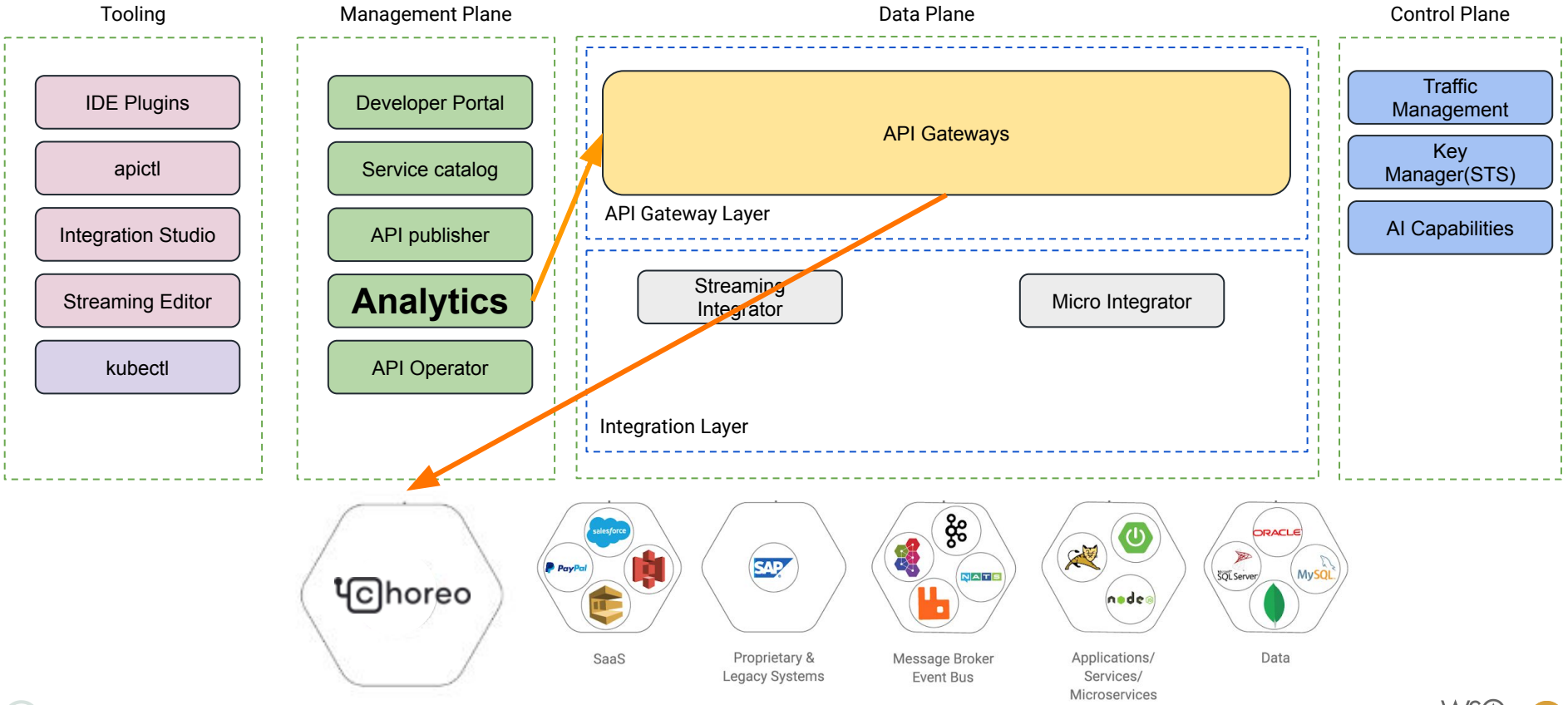
# Introduction to API Analytics

Before API Version 4 all of the products had different analytics implementations.

Now we are starting to standardize on the cloud native features available in Choreo.

This approach will capture round trip analytics and send that to Choreo Analytics Portal.

# WSO2 API Manager 4.0.0



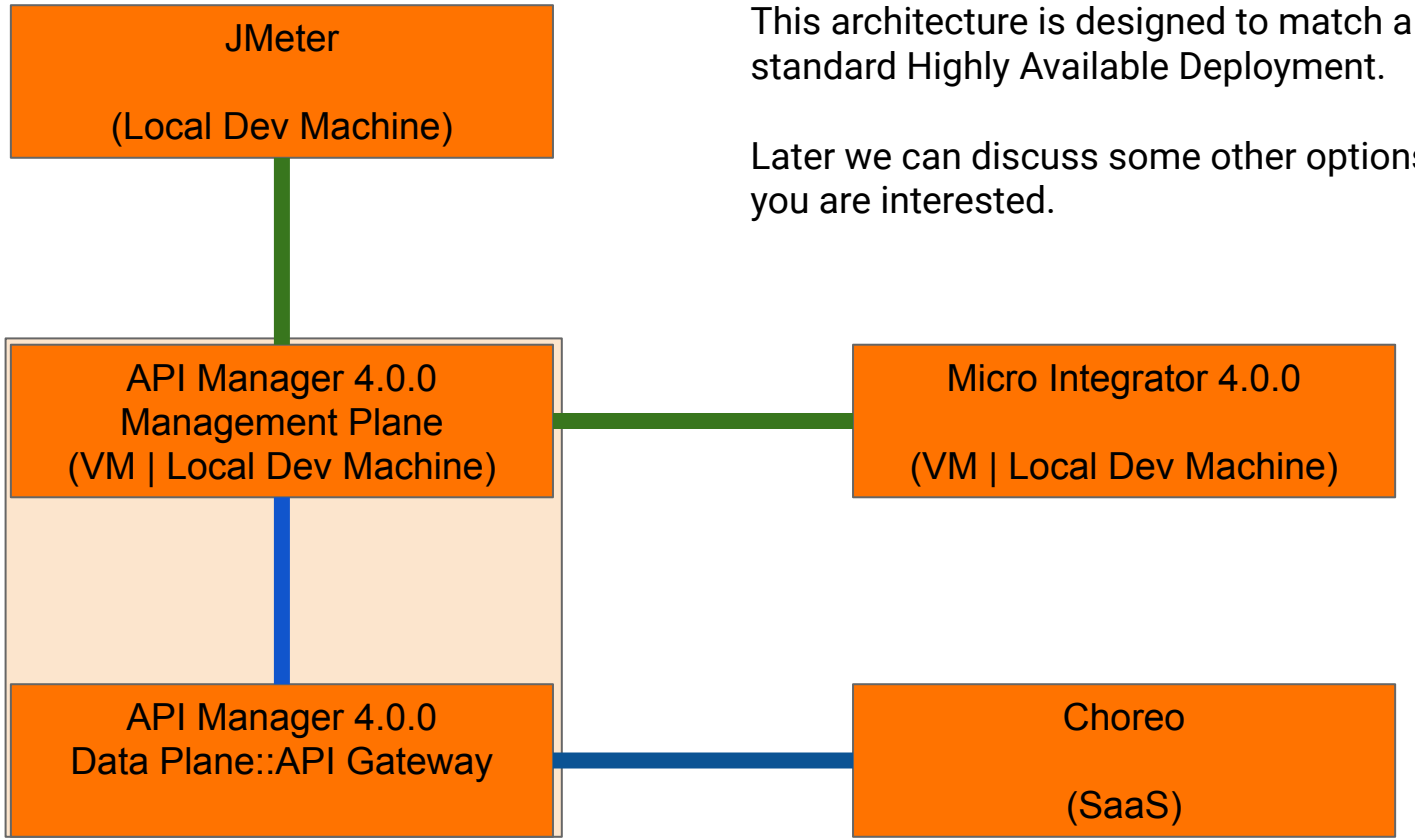
# Cloud-based Analytics

- Analytics will be provided as a cloud solution to both on-prem customers and Choreo users.
- A central portal will provide all necessary charts for each customer with data isolation.
- **On-premise users will have to on-board with Choreo to use Analytics.**
- Historically, managing analytics has been tough for customers in their environments. Moving the solution to the cloud will take this burden away from the customers while also benefit WSO2 with the scalability of the cloud architecture.
- Native Azure cloud services are used as much as possible for this architecture to achieve cloud-native characteristics.

# Microgateway  Improvements - Now Called Choreo Connect

- Developed on top of Envoy proxy with supporting components.
- Mutable API Gateway for cloud-native deployments.
  - **Our Use Case: API Gateway Transfer Analytics to Choreo**
- Support two deployment modes
  - Ingress Gateway
  - Shared API Gateway
- Components in a Microgateway Deployment
  - Router - Envoy based Proxy
  - Enforcer - An Out process Filter chain for envoy.
  - MG Adaptor
    - Receives the API create/update requests
    - Data plane pulls API changes from control plane
    - Configures and governs the data plane

# Demo Setup




This architecture is designed to match a standard Highly Available Deployment.

Later we can discuss some other options if you are interested.

# Setup Steps Overview

**Install Prerequisites**

- JMeter
- Git
- Maven
- Clone The Project

**Choreo**

- Sign into Choreo
- Register the Environment

**Micro Integrator**

- Open MI Project in IntegrationStudio
- Build CAPP deployment package
- Deploy CAPP in MI

**APIM Gateway**

- Configure deployment.toml
- Start up
- Import APIs
- Publish APIs
- Subscribe to the APIs

**Testing**

- Run JMeter tests
- View the Analytics Dashboard

# Install Prerequisites

# Prerequisite Tools

Download JMeter

Download Git

Download Maven

It is assumed that you already have these installed in your local machine and/or in your VMs:

- IntegrationStudio
- APIM 4.0.0
- MI 4.0.0

If that assumption is incorrect please see the wso2.com website for installation instructions.

Other tools and configurations are covered next.

# Configure Prerequisites

# Clone Demo Project

Review this Demo Project page. Then find a nice place for the demo project files to live on your machine for this project. This location will be referred to as **<DemoProject>** for this presentation.

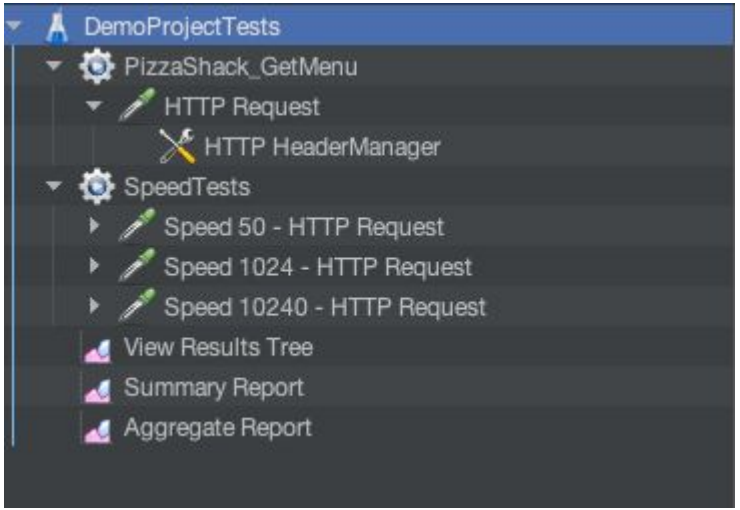
Then issue this command:

**git clone https://github.com/BechtelCanDolt/WSO2-APIM40-Analytics-ChoreoConnect.git**

# Configure JMeter

Start up JMeter.

Open
<DemoProject>/WSO2-APIM40-Analytics-ChoreoConnect/jmeter_test/DemoProjectTests.jmx

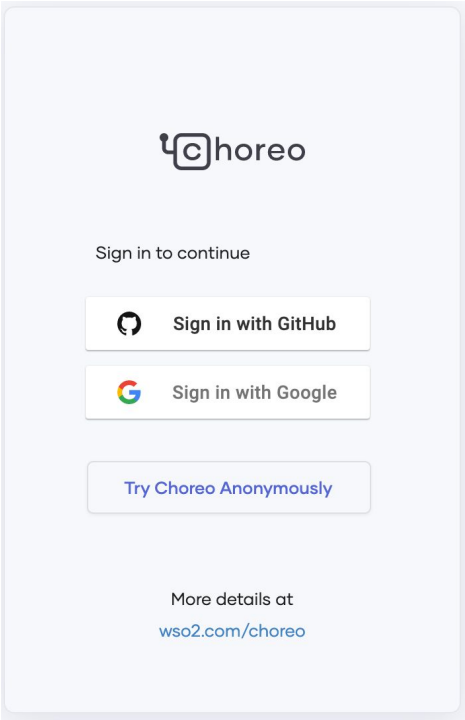



*DON'T RUN ANY TESTS YET!*
*We still need to configure everything else.*

# Configuring Choreo

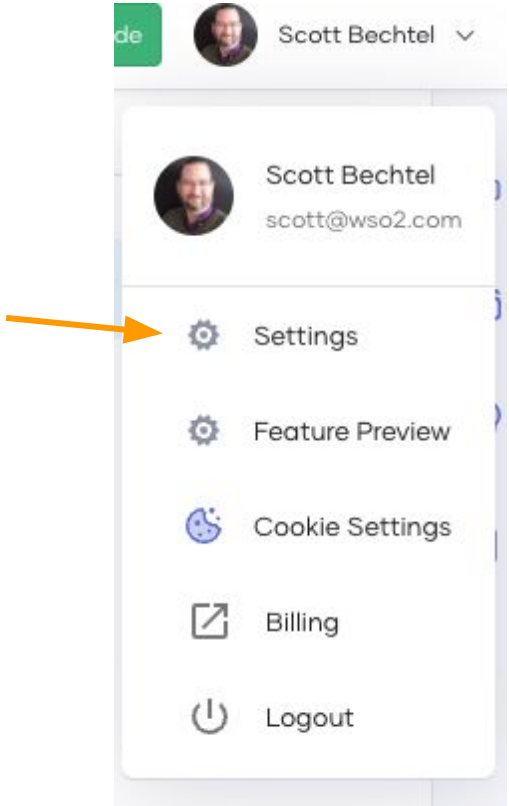
# Sign Into Choreo

1. Navigate to Choreo using the following URL.
   https://console.choreo.dev.
2. Sign-in to Choreo.



# Register Your Environment

Click on the user profile in the top right corner of the screen and select **Settings**.

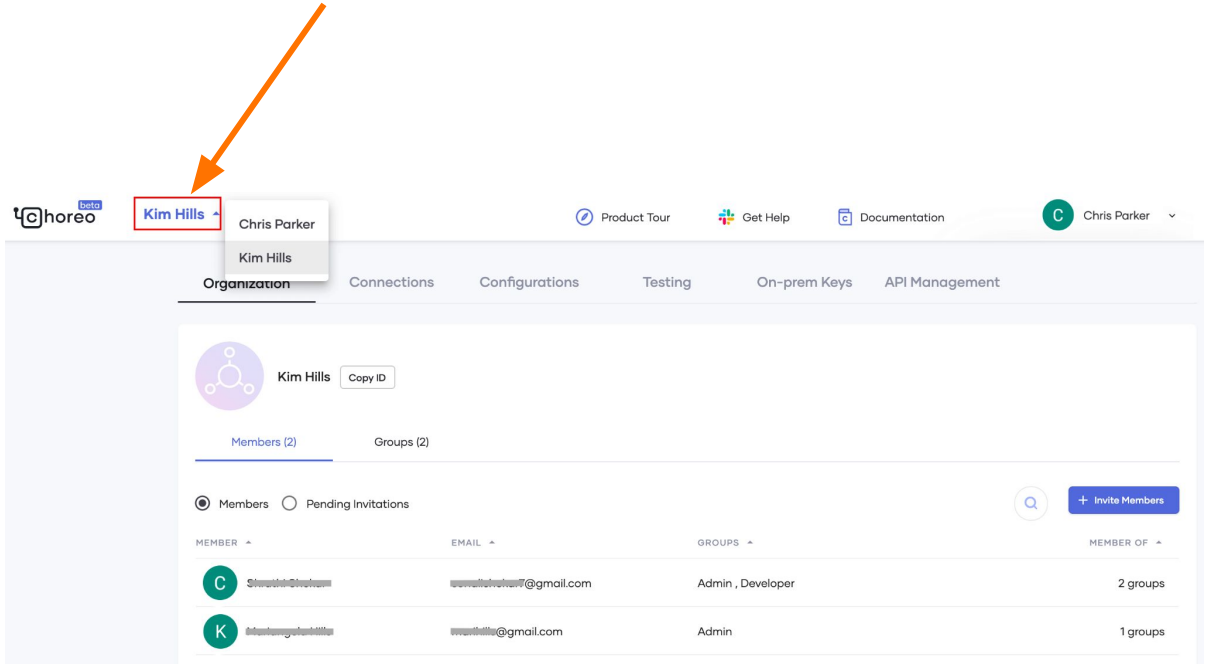


# Register Your Environment

*This probably doesn't apply for your situation currently. It's okay to skip.*

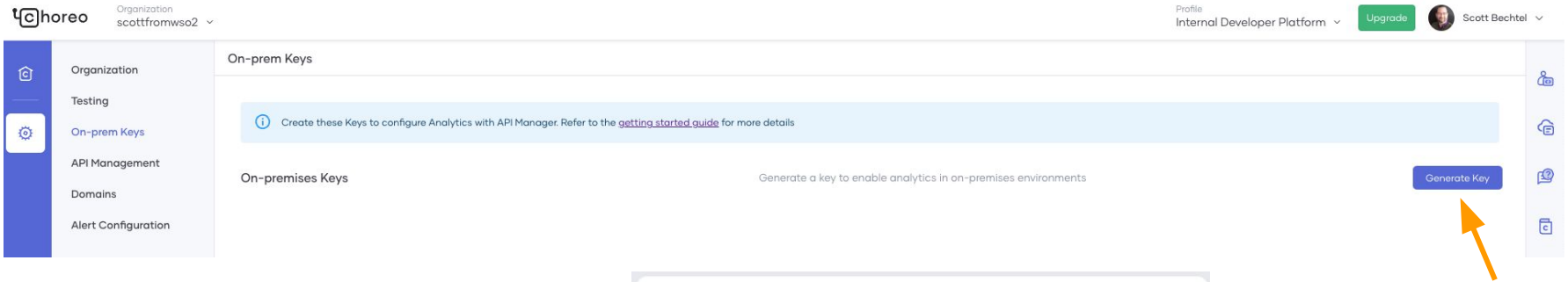
If you are a member of multiple organizations, select the appropriate organization from the top left-hand corner.

For more information on handling users with role-based access control in organizations, see Role-based Access Control for API Analytics.



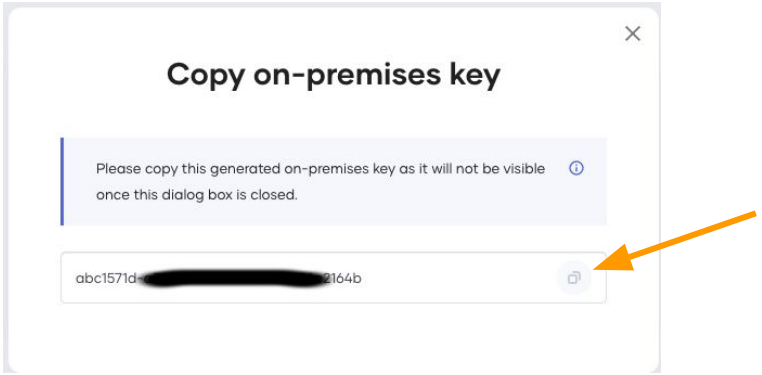
# Register Your Environment

Select the **On-prem Keys** tab and click **Generate keys**.




Enter a suitable name for your environment (e.g., customer1-dev). Click **Generate**.

Copy the key that was generated before closing the dialog box.



# Register Your Environment

**Info**

The validity period of the key and the number of keys that you are allowed to generate vary based on the type of user as explained below:

| User Type | Descrption | Validity Period | Number of Keys Allowed |
|---|---|---|---|
| Free user | Refers to users who do not have a valid subscription for Choreo. | 2 weeks<br>**NOTE:** The validity of the keys can be temporarily extended by contacting sales and submitting a request. | 3 keys |
| Subscription customers | Refers to users who have a valid subscription for Choreo. | 1 year | unlimited |

# Configuring APIM

# Configure The Gateway

FYI

The Gateway configuration process varies based on the Gateway that you are using. (**We will be using the API Gateway configuration.**)

If your system connects to the service through a proxy server/firewall, you need to grant access to the following endpoints to access the Choreo Analytics Cloud service to publish data.

| Host | Port | Protocol |
|---|---|---|
| `analytics-prod-incoming.servicebus.windows.net` | 5671 | AMQP |
| `analytics-prod-incoming.servicebus.windows.net` | 5672 | AMQP |
| `analytics-event-auth.choreo.dev` | 443 | HTTPS |

# API Gateway Configuration

Back up deployment.tom file. IE: cp

`<API-M_HOME>/repository/conf/deployment.toml`
`<API-M_HOME>/repository/conf/deployment.toml.orig`

Open the `<API-M_HOME>/repository/conf/deployment.toml` file and update the `[apim.analytics]` config segment as follows:

```
[apim.analytics]
enable = false
config_endpoint = "https://localhost:8080/auth/v1"
auth_token = ""
```

```
[apim.analytics]
enable = true
config_endpoint = "https://analytics-event-auth.choreo.dev/auth/v1"
auth_token = "<use token that you generate>"
```

Enter the on-premise token, which you obtained via the Choreo Portal in the **Register your environment** step, as the Auth token field.

```
[apim.analytics]
enable = true
config_endpoint = "https://analytics-event-auth.choreo.dev/auth/v1"
auth_token = "abc1571d-[redacted]-2164b"
```

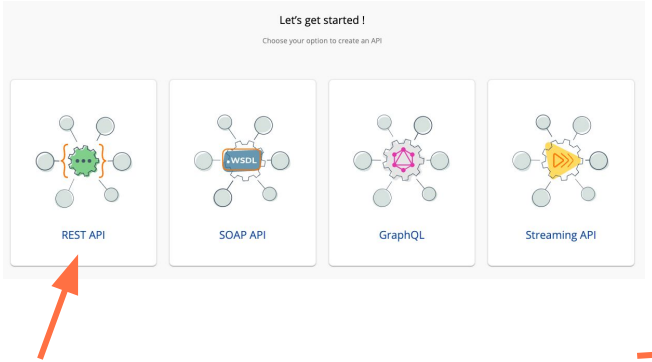
# Restart/Start Up APIM

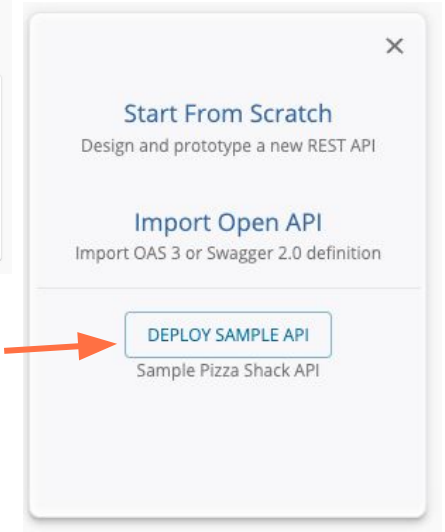
<APIM_HOME>/bin/api-manager.sh

# Create Demo REST API - PizzaShackAPI

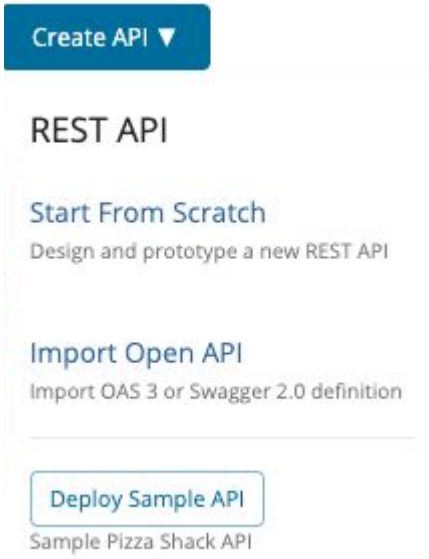
Log into the publisher:
https://localhost:9443/publisher (admin/admin)

Create REST API → Deploy Sample API



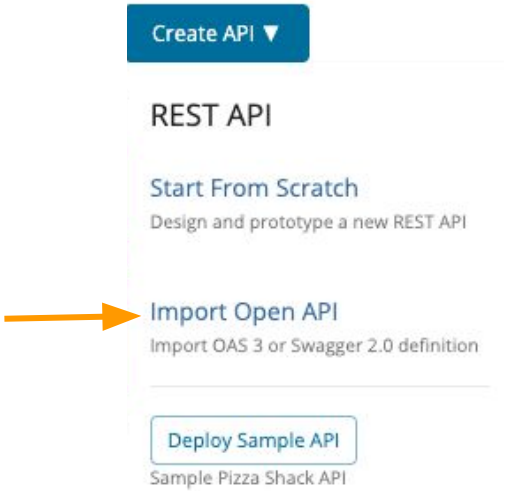



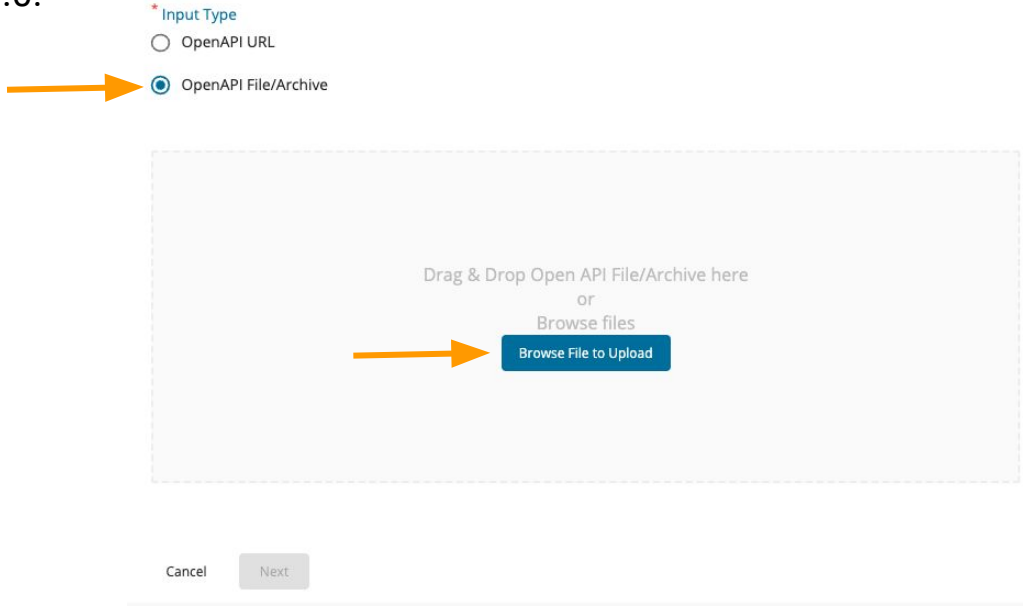

If you have other API defined then click on Create API and then Deploy Sample API.



# Import DemoProjectAPI

Import DemoProject API definition: <DemoProject>/WSO2-APIM40-Analytics-ChoreoConnect/apim_src/admin-DemoProjectAPI-1.0.0.zip



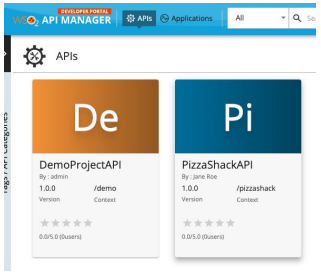



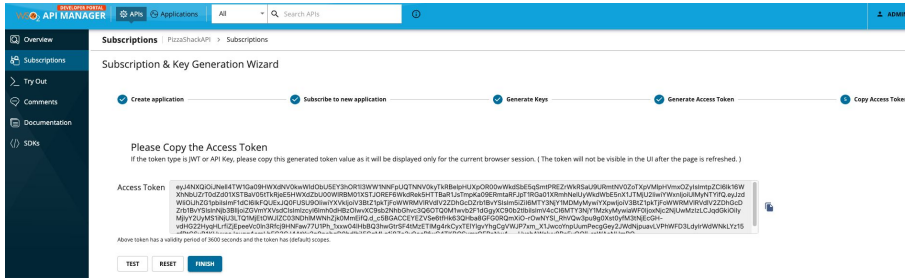
# Subscribe to APIs

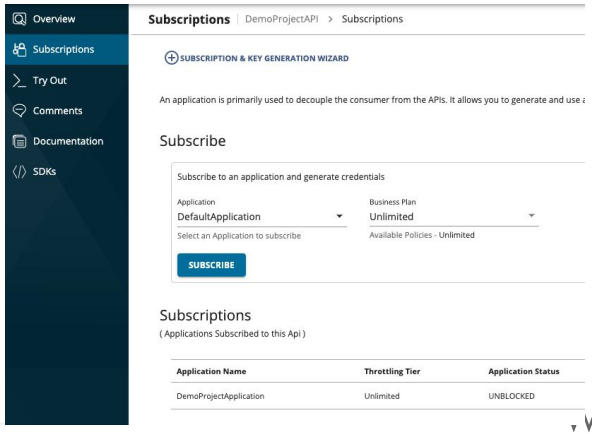
Login to https://localhost:9443/devportal (admin/admin)

Select PizzaShack and create an application subscription and copy the generated token to a safe place. We'll need that for JMeter.

Then select DemoProject and subscribe using your new application.



Breathe….

Halfway there.

Now keep going…

# Configuring Micro Integrator

# Setting Up MI Demo Code

Bring up a terminal and go to:

```
<DemoProject>/WSO2-APIM40-Analytics-Chore
oConnect/mi_src/IntegrationStudioWorkspac
e/MIDemoProject

mvn install

cd MIDemoProjectCompositeExporter/target

cp
MIDemoProjectCompositeExporter_1.0.0-SNAP
SHOT.car
<MI_HOME>/repository/deployment/server/ca
rbonapps
```

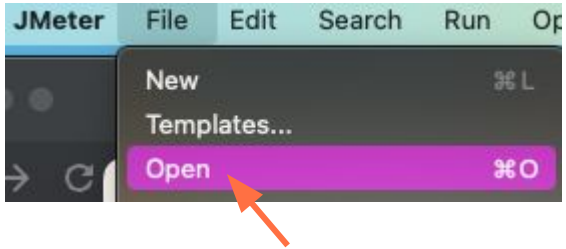
# Starting Everything Up / TEST!

# Start Up MI

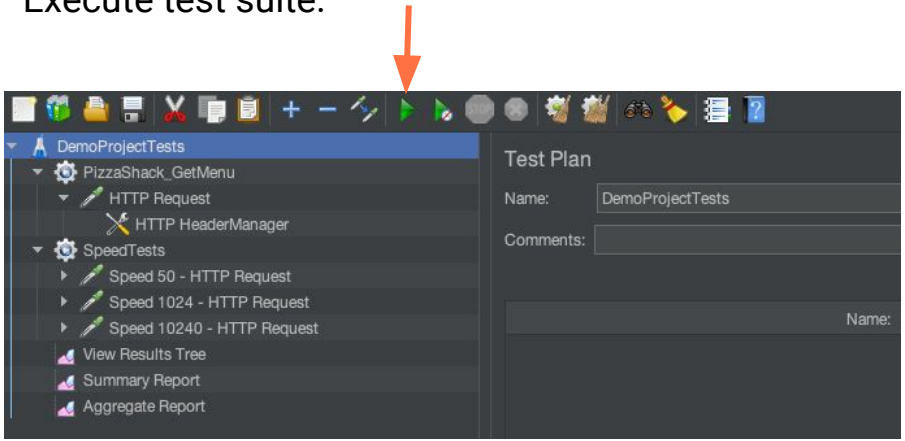
<MI_HOME>/bin/micro-integrator.sh

# Start Up JMeter

Open JMeter project from <DemoProject>/WSO2-APIM40-Analytics-ChoreoConnect/jmeter_test/DemoProjectTests.jmx




Execute test suite.



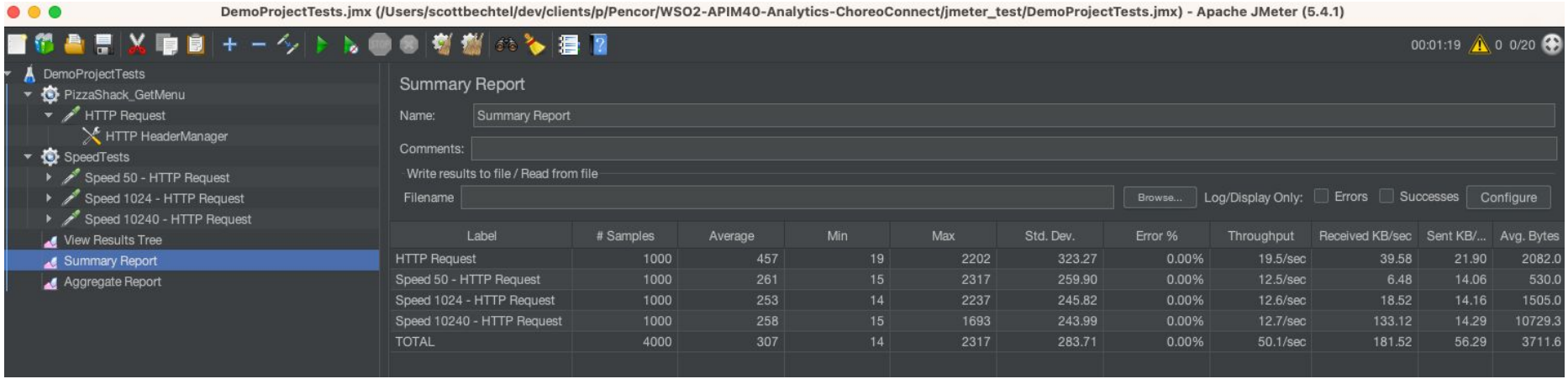
# Demo Time

# Run Tests

**APIM Only**
Pizza Shack Get Menu Test

**Through MI**
Run Speed Test 50 bytes
Run Speed Test 1024 bytes
Run Speed Test 10240 bytes

# Sample JMeter Results

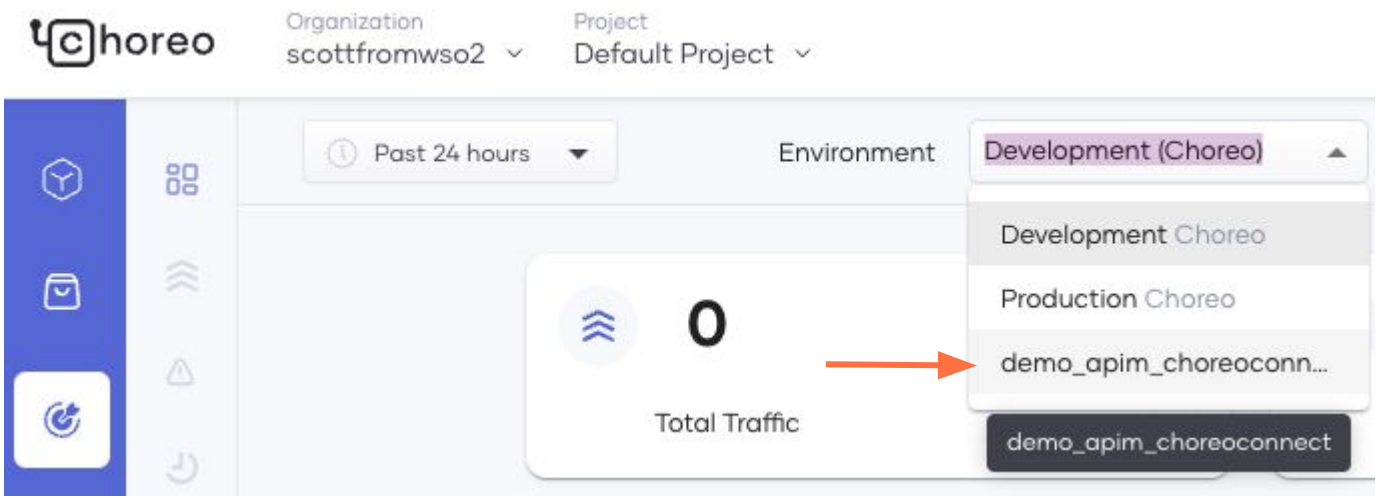



| Label | # Samples | Average | Min | Max | Std. Dev. | Error % | Throughput | Received KB/sec | Sent KB/... | Avg. Bytes |
|---|---|---|---|---|---|---|---|---|---|---|
| HTTP Request | 1000 | 457 | 19 | 2202 | 323.27 | 0.00% | 19.5/sec | 39.58 | 21.90 | 2082.0 |
| Speed 50 - HTTP Request | 1000 | 261 | 15 | 2317 | 259.90 | 0.00% | 12.5/sec | 6.48 | 14.06 | 530.0 |
| Speed 1024 - HTTP Request | 1000 | 253 | 14 | 2237 | 245.82 | 0.00% | 12.6/sec | 18.52 | 14.16 | 1505.0 |
| Speed 10240 - HTTP Request | 1000 | 258 | 15 | 1693 | 243.99 | 0.00% | 12.7/sec | 133.12 | 14.29 | 10729.3 |
| TOTAL | 4000 | 307 | 14 | 2317 | 283.71 | 0.00% | 50.1/sec | 181.52 | 56.29 | 3711.6 |

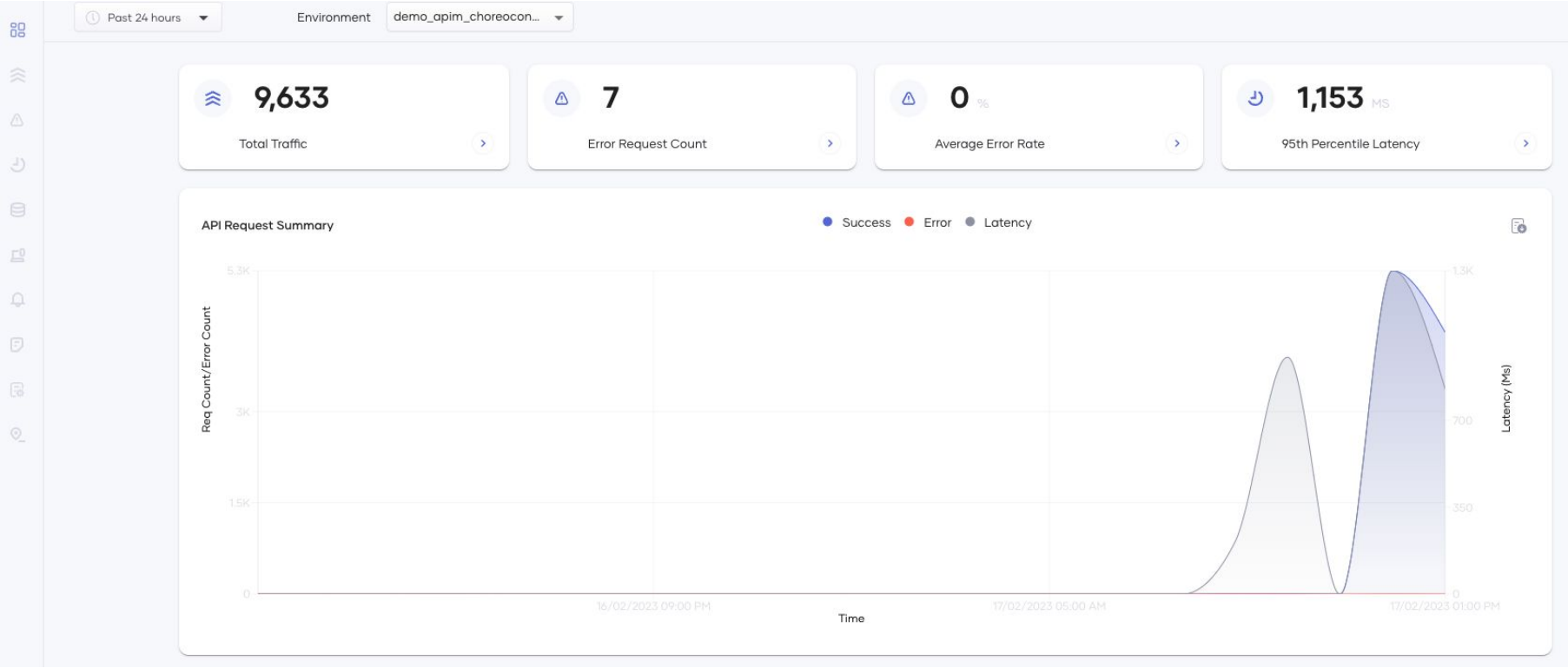
# Getting to the Choreo Insights

https://console.choreo.dev/insights/overview

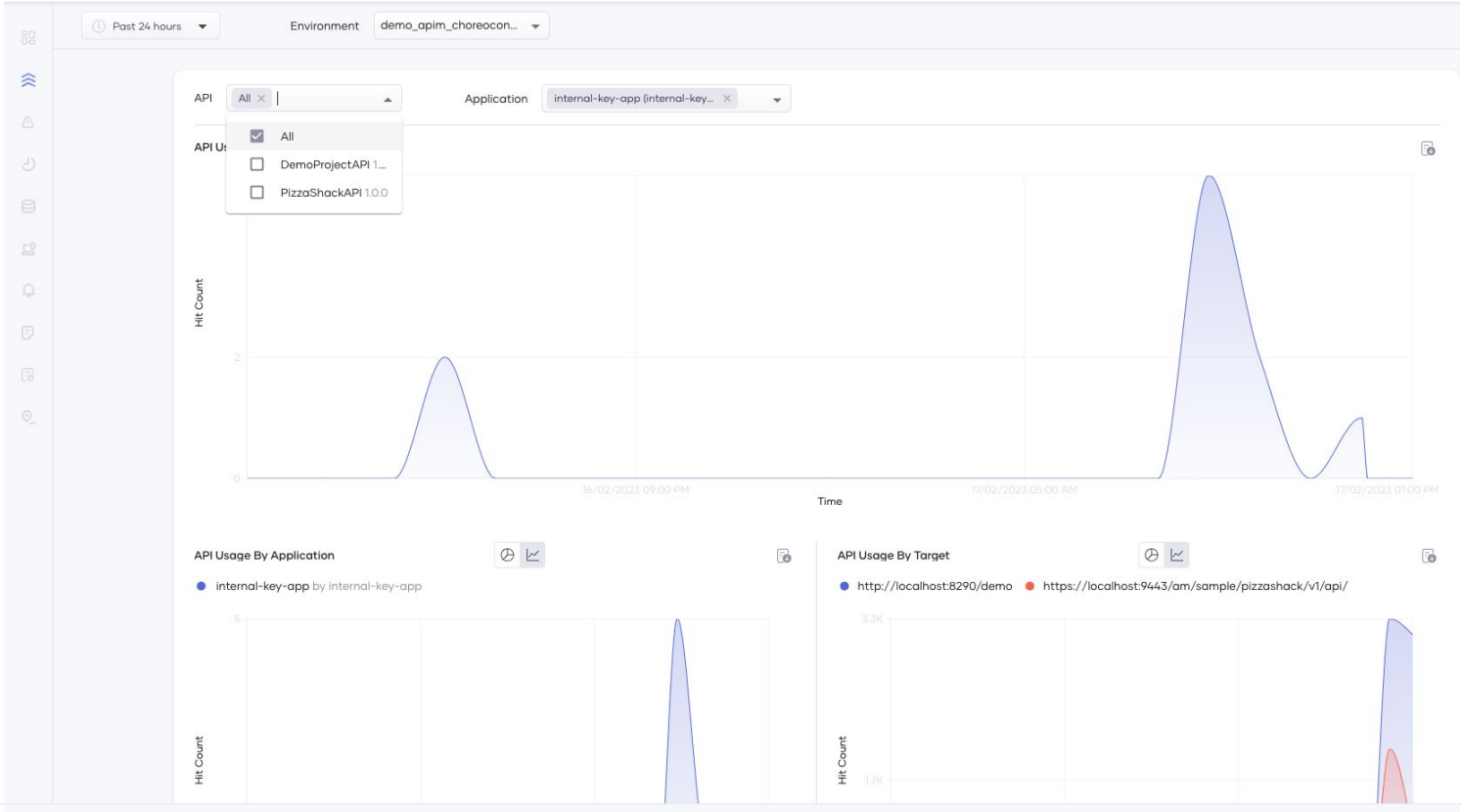
Select your APIM Environment



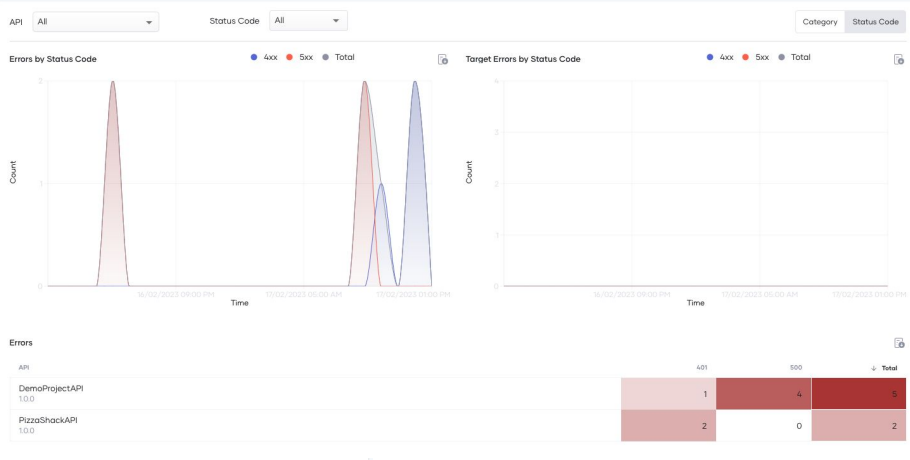
# Results

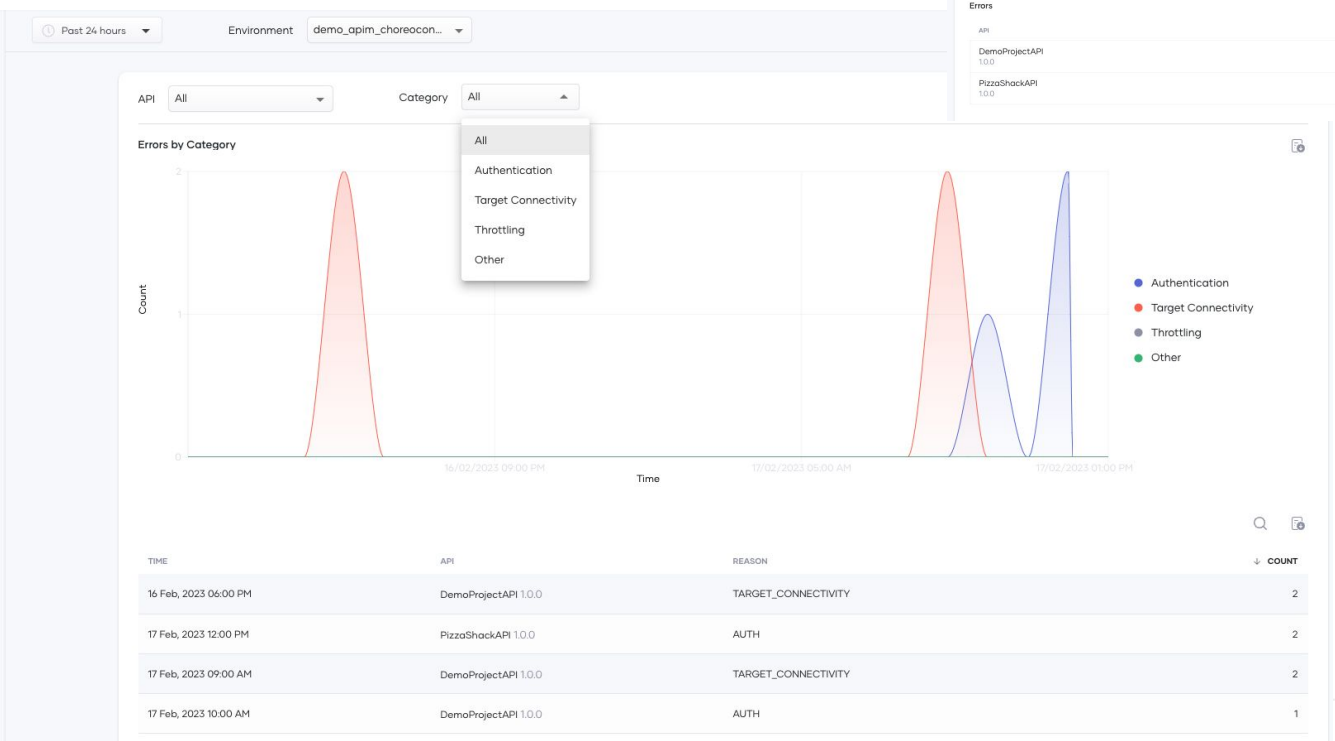

Past 24 hours
Environment
demo_apim_choreocon...
9,633
Total Traffic
7
Error Request Count
0 %
Average Error Rate
1,153 MS
95th Percentile Latency
API Request Summary
Success
Error
Latency
Req Count/Error Count
Latency (Ms)
5.3K
3K
1.5K
0
1.3K
700
350
0
16/02/2023 09:00 PM
17/02/2023 05:00 AM
17/02/2023 01:00 PM
Time

# View Traffic

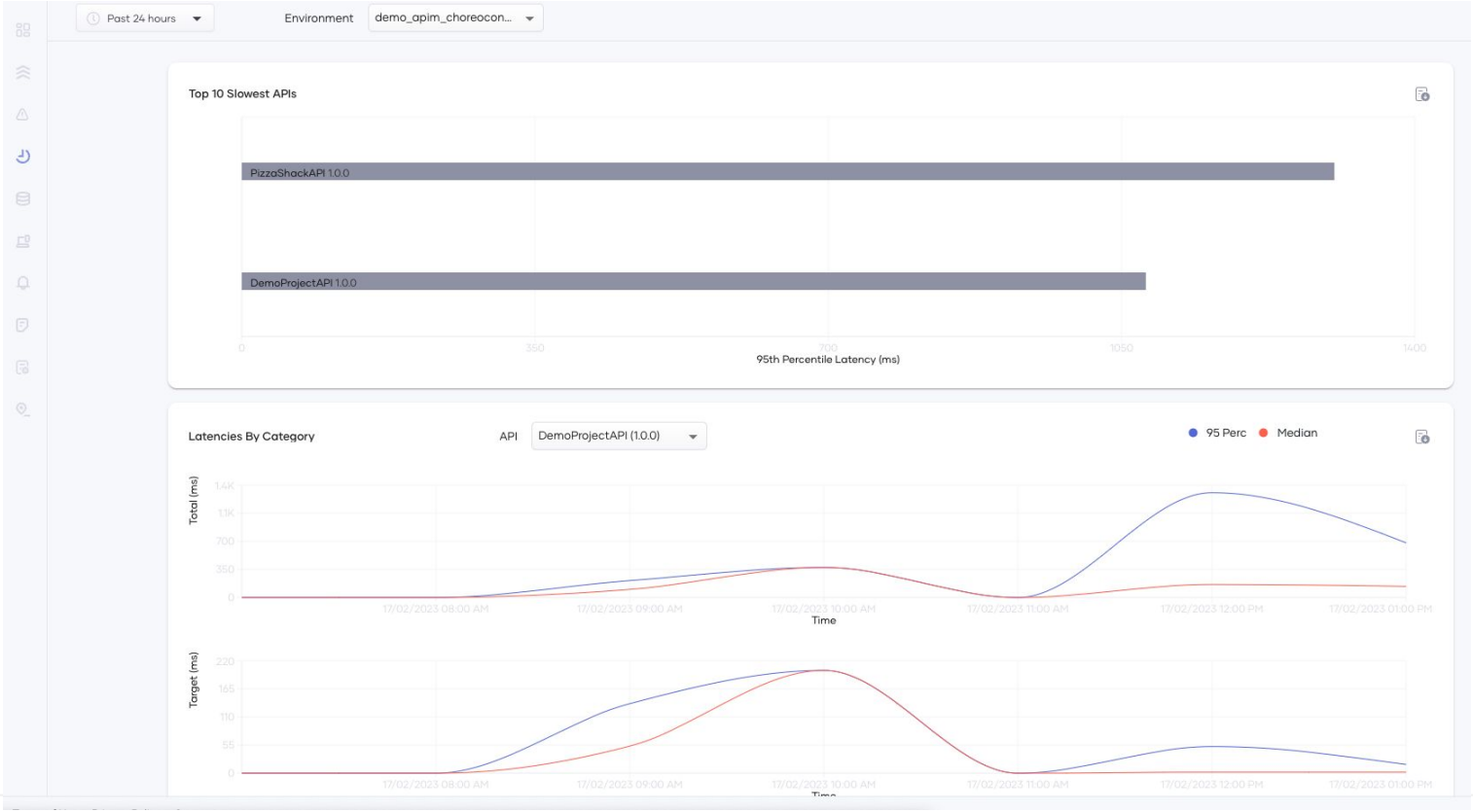


# Connection Errors

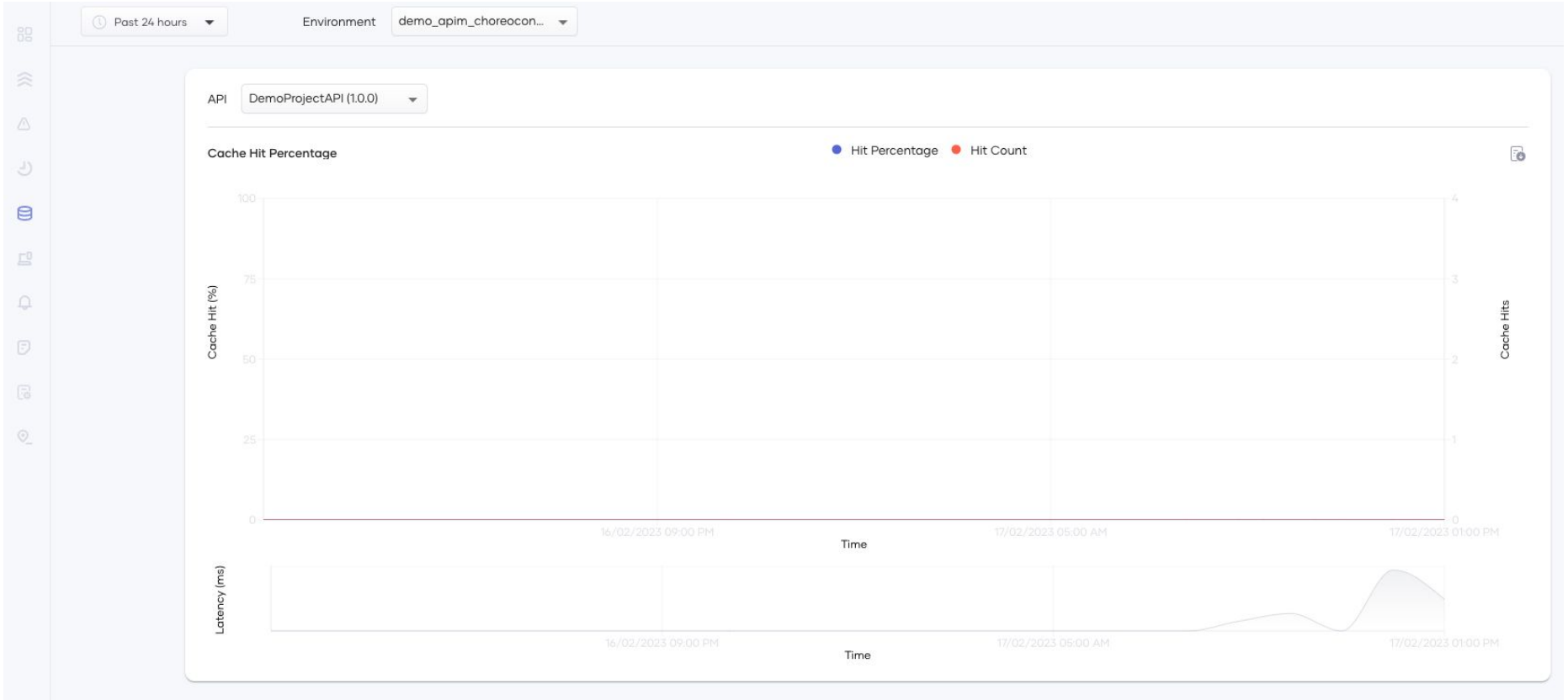


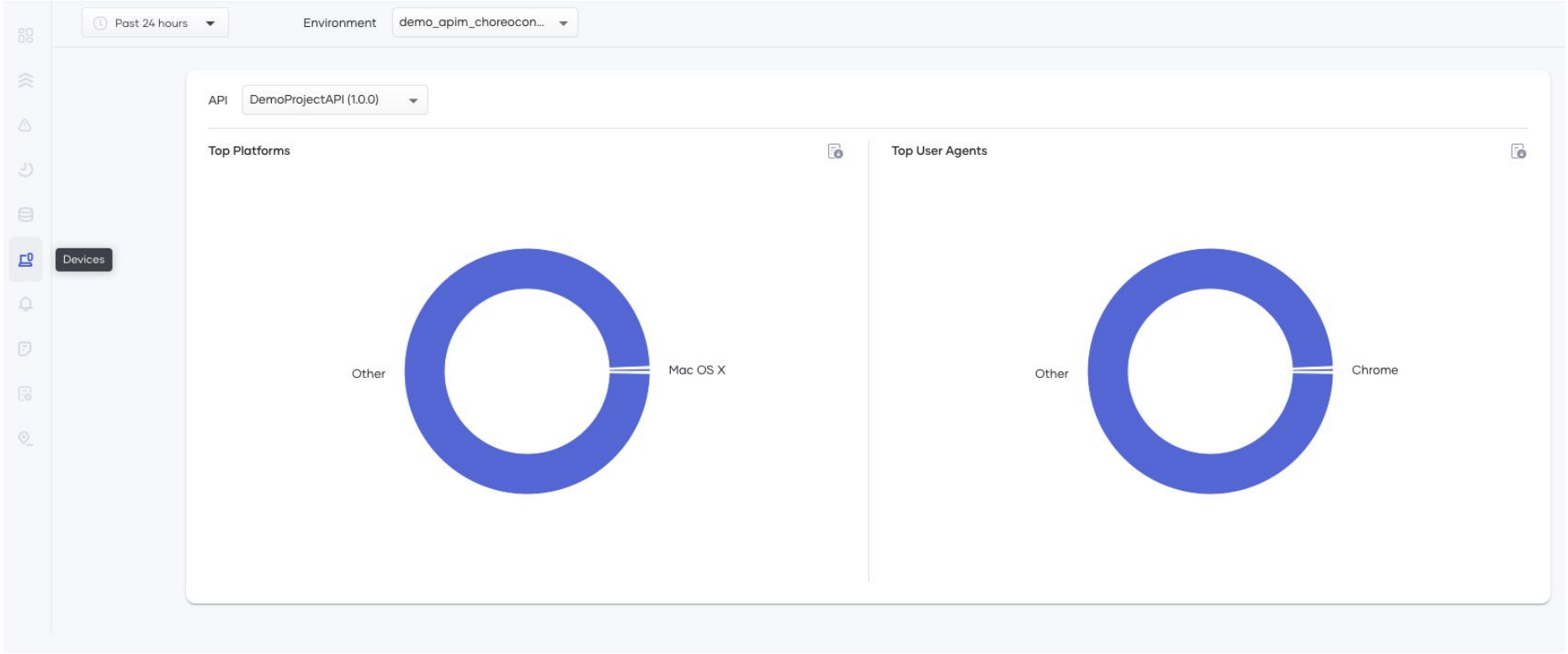
# Latency


Past 24 hours
Environment
demo_apim_choreocon...
Top 10 Slowest APIs
PizzaShackAPI 1.0.0
DemoProjectAPI 1.0.0
0
350
700
1050
1400
95th Percentile Latency (ms)
Latencies By Category
API
DemoProjectAPI (1.0.0)
95 Perc
Median
Total (ms)
1.4K
1.1K
700
350
0
17/02/2023 08:00 AM
17/02/2023 09:00 AM
17/02/2023 10:00 AM
17/02/2023 11:00 AM
17/02/2023 12:00 PM
17/02/2023 01:00 PM
Time
Target (ms)
220
165
110
55
0
17/02/2023 08:00 AM
17/02/2023 09:00 AM
17/02/2023 10:00 AM
17/02/2023 11:00 AM
17/02/2023 12:00 PM
17/02/2023 01:00 PM
Time

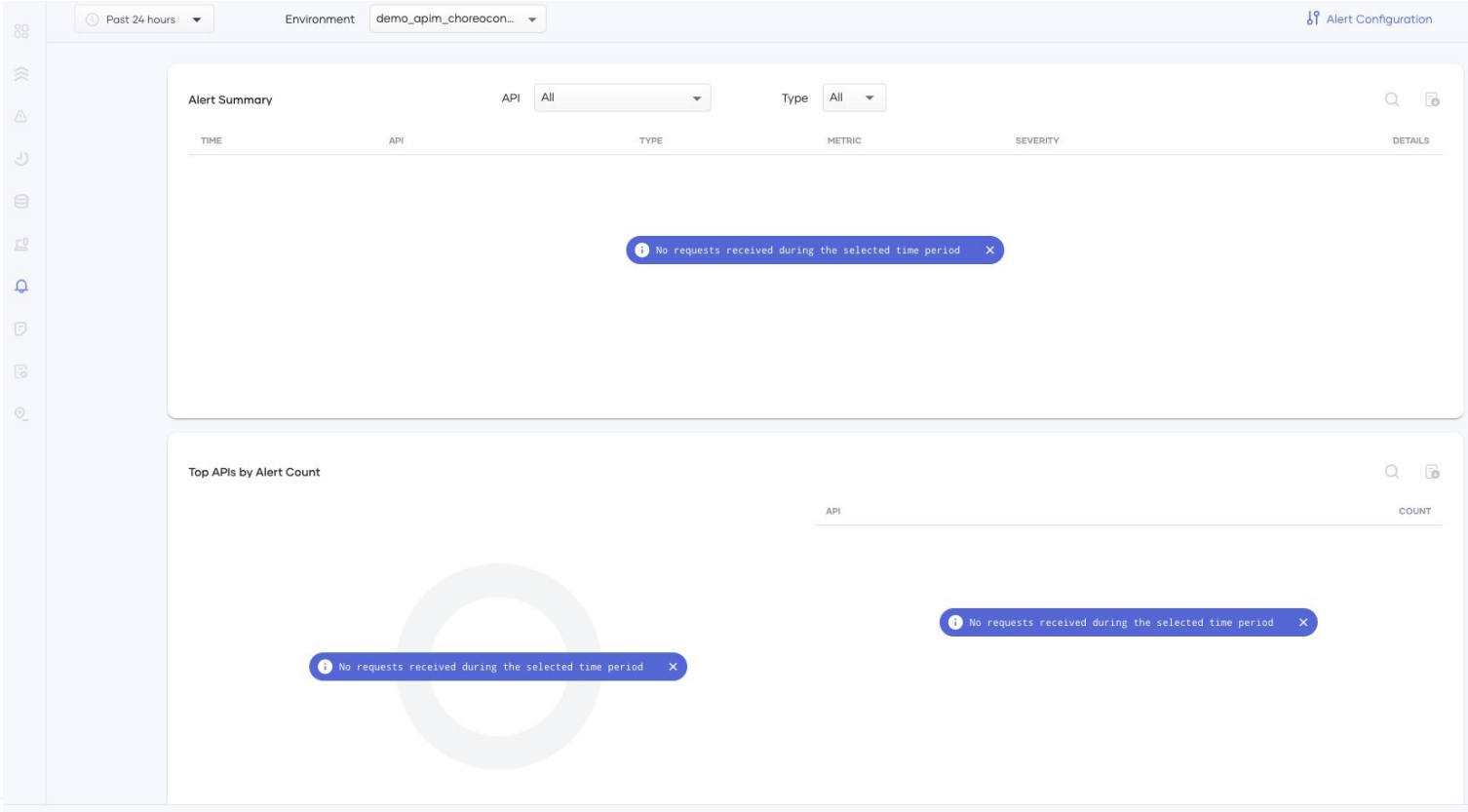
# Cache Hits


Past 24 hours
Environment
demo_apim_choreocon...
API
DemoProjectAPI (1.0.0)
Cache Hit Percentage
Hit Percentage
Hit Count
Cache Hit (%)
Cache Hits
100
75
50
25
0
4
3
2
1
0
16/02/2023 09:00 PM
17/02/2023 05:00 AM
17/02/2023 01:00 PM
Time
Latency (ms)
16/02/2023 09:00 PM
17/02/2023 05:00 AM
17/02/2023 01:00 PM
Time

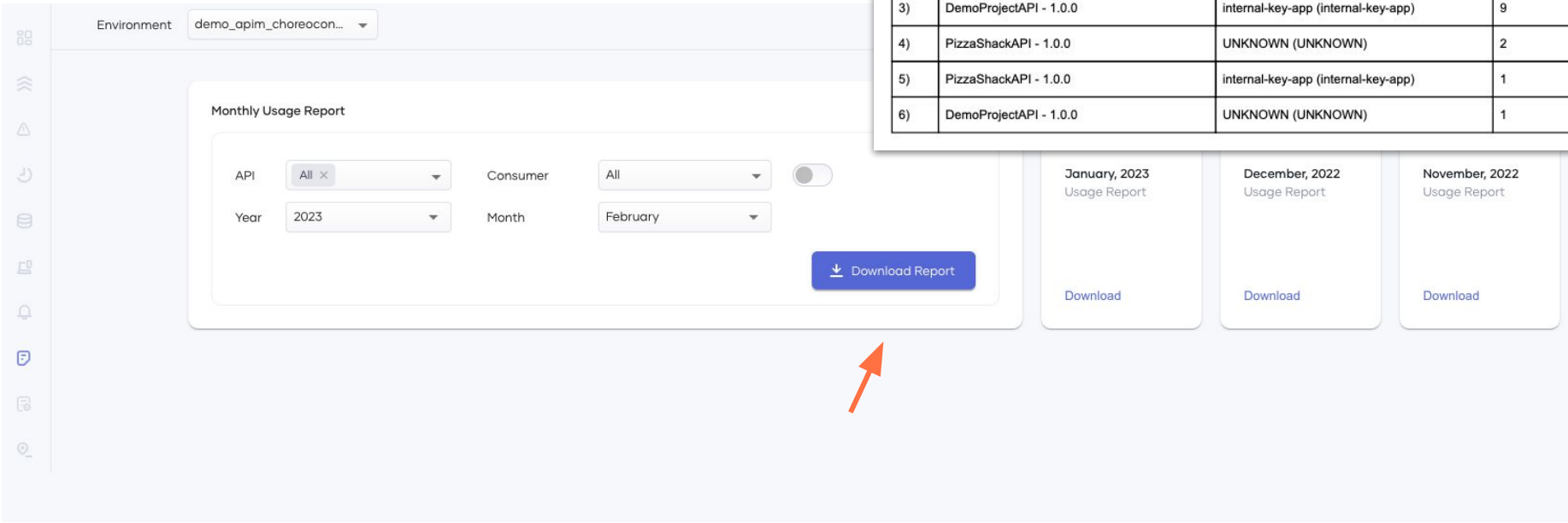
# Devices


Past 24 hours
Environment
demo_apim_choreocon...
Devices
API
DemoProjectAPI (1.0.0)
Top Platforms
Other
Mac OS X
Top User Agents
Other
Chrome

# Alerts


Past 24 hours
Environment
demo_apim_choreocon...
Alert Configuration
Alert Summary
API
All
Type
All
TIME
API
TYPE
METRIC
SEVERITY
DETAILS
No requests received during the selected time period
Top APIs by Alert Count
API
COUNT
No requests received during the selected time period
No requests received during the selected time period

# Usage Reports




## Monthly Usage Summary

choreo

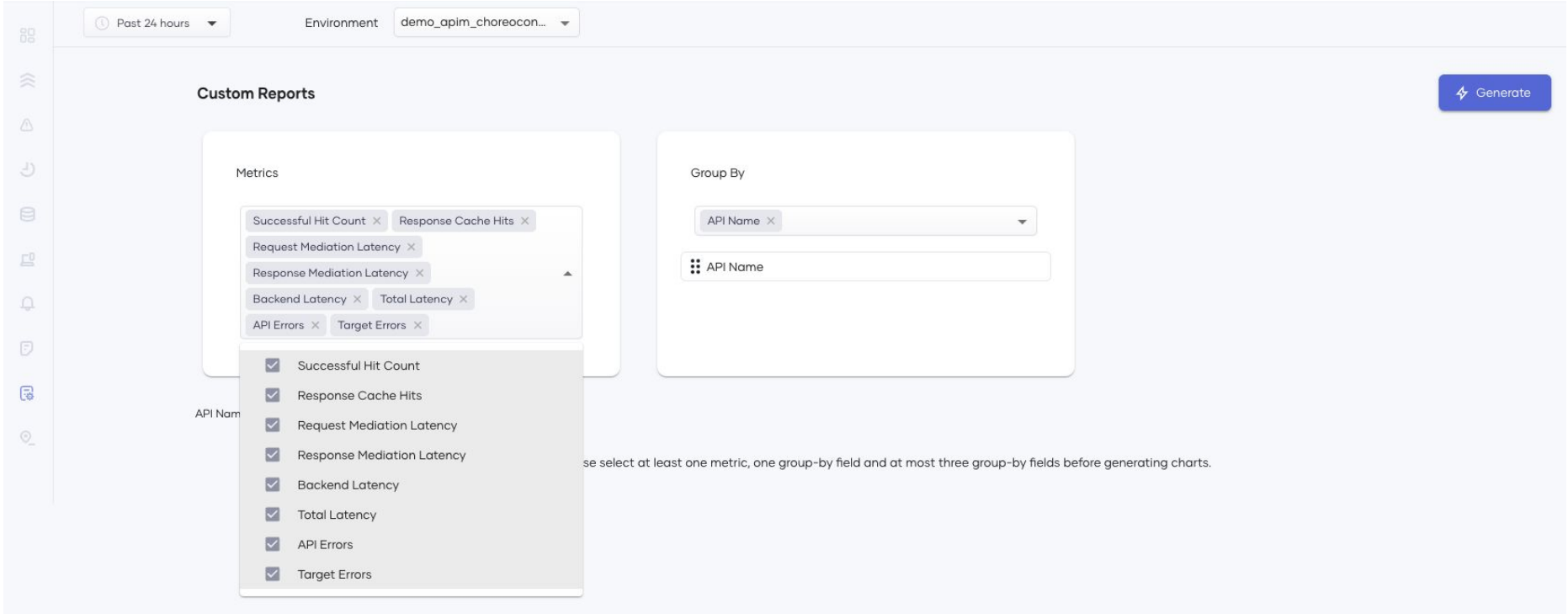
**Report generated on : 17 February, 2023 01:20 PM**

**Organization : scottfromwso2**
**Environment : demo_apim_choreoconnect**
**Tenant : carbon.super**

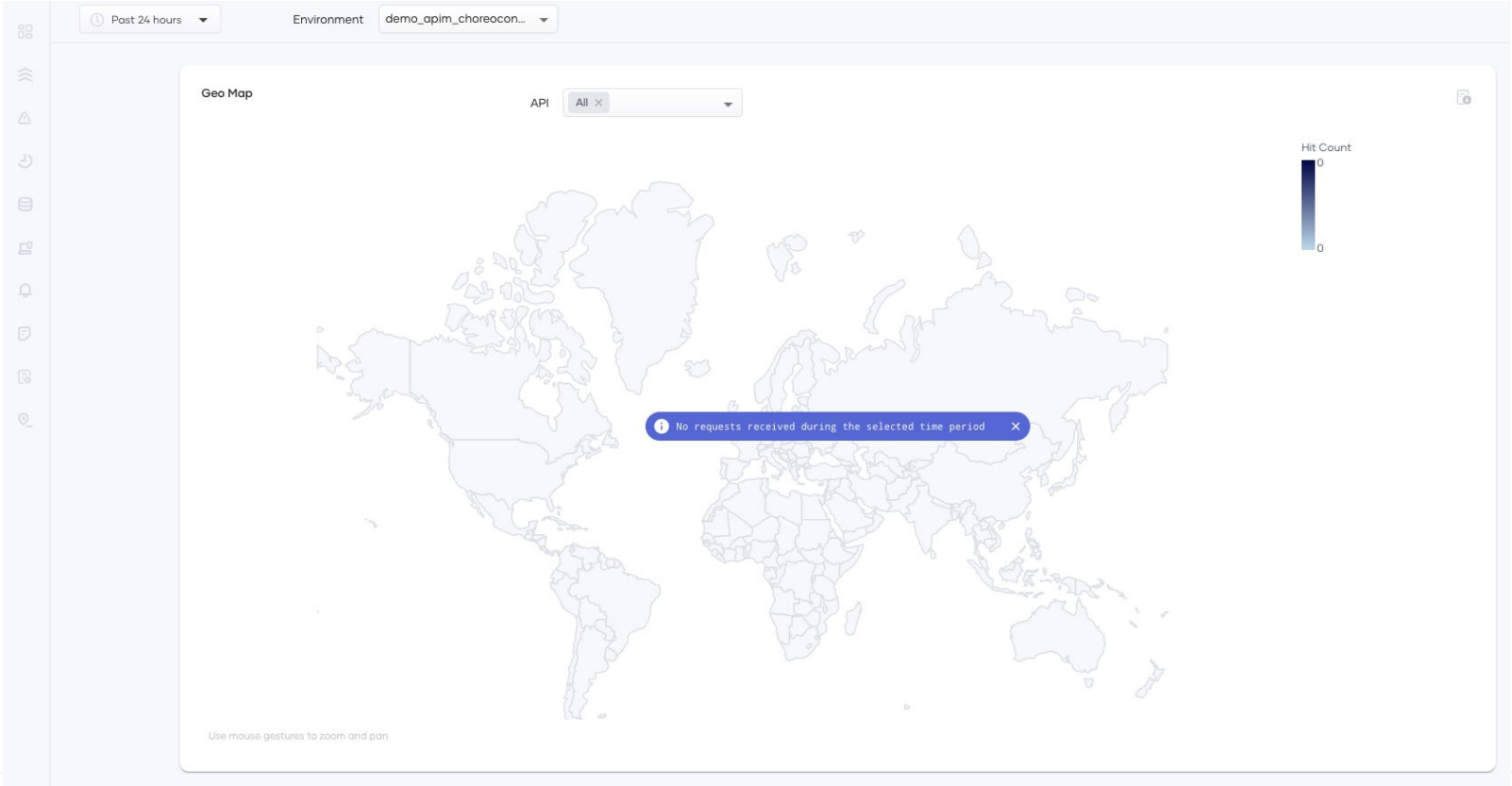
**Reporting period : February, 2023**
**Total Request count : 9633**

| # | API | Application | Usage |
|---|---|---|---|
| 1) | DemoProjectAPI - 1.0.0 | DemoProjectApplication (admin) | 6460 |
| 2) | PizzaShackAPI - 1.0.0 | DemoProjectApplication (admin) | 3160 |
| 3) | DemoProjectAPI - 1.0.0 | internal-key-app (internal-key-app) | 9 |
| 4) | PizzaShackAPI - 1.0.0 | UNKNOWN (UNKNOWN) | 2 |
| 5) | PizzaShackAPI - 1.0.0 | internal-key-app (internal-key-app) | 1 |
| 6) | DemoProjectAPI - 1.0.0 | UNKNOWN (UNKNOWN) | 1 |

# Custom Reports



# Geo Map


Past 24 hours
Environment
demo_apim_choreocon...
Geo Map
API
All
Hit Count
0
0
No requests received during the selected time period
Use mouse gestures to zoom and pan

# Well that was fun!

# Question Time!

# THANK YOU

wso2.com