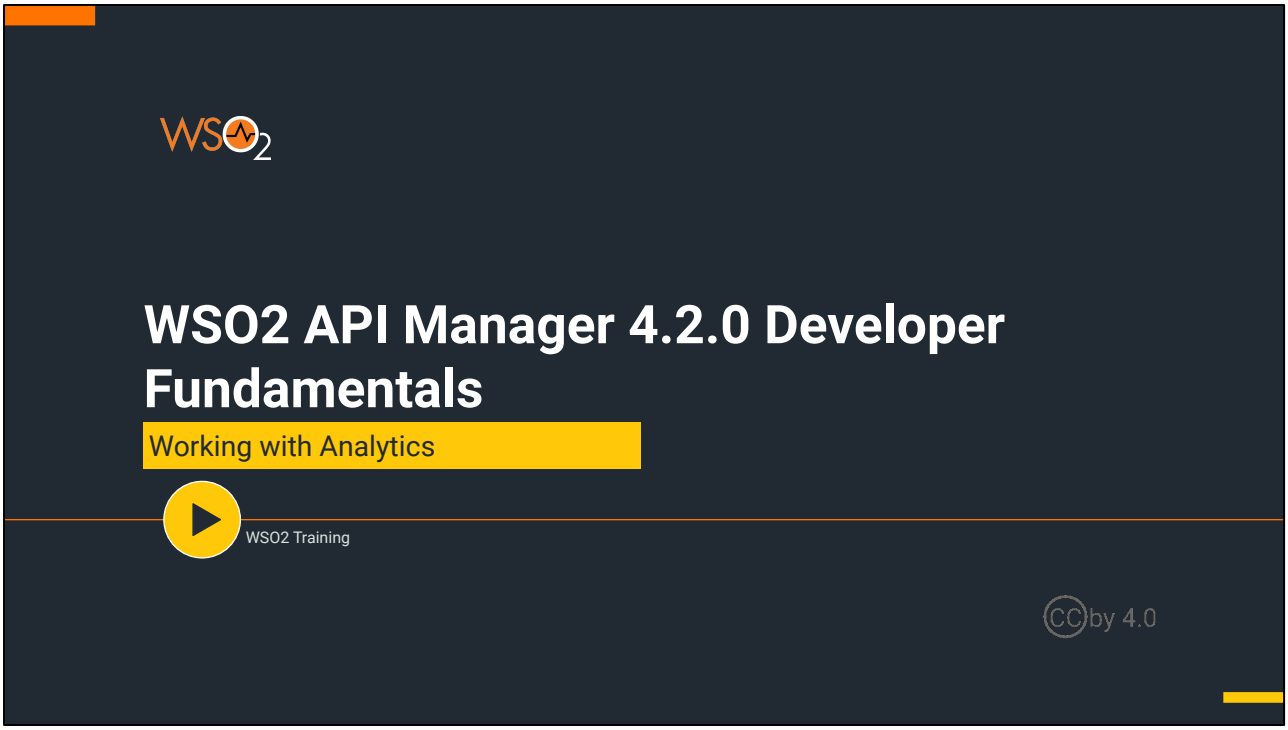
WSO2
WSO2 API Manager 4.2.0 Developer Fundamentals
Working with Analytics
WSO2 Training
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Analytics Overview

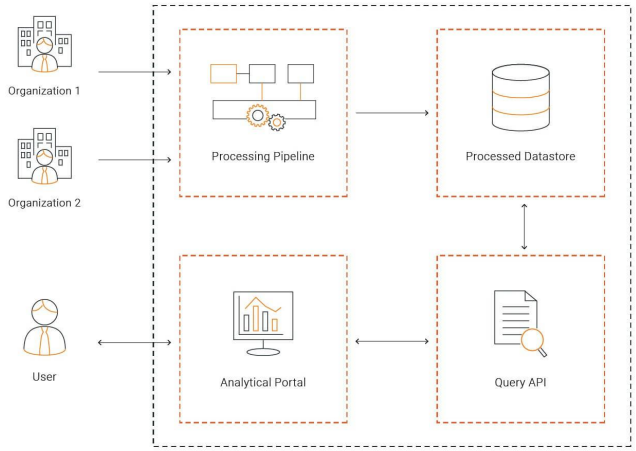
Why Analytics?

- APIs are widely used in business integrations and are becoming a key part of driving an organization's business strategy.
- Ensures proper functioning of the APIs, by getting feedback on the performance and deriving business insights from APIs.
- Provides statistics, reports, and graphs on the APIs.
- Alerts to notify about unusual behaviors and error conditions in near real-time.
- Monitor API invocations and summarize statistics in order to monetize API usage.

APIs are widely used in business integrations and are becoming a key part of driving an organization's business strategy. Ensuring the proper functioning of the APIs, getting feedback on the performance and deriving business insights from APIs are becoming equally important. WSO2 API Manager Analytics does this by integrating with WSO2 API Manager to provide statistics, reports, and graphs on the APIs deployed in WSO2 API Manager. It further allows configuring Alerts to notify about unusual behaviors and error conditions in near real-time. WSO2 API Analytics provides the capability to monitor API invocations and to summarize statistics in order to monetize API usage.

WSO2 API Manager Analytics provides reports, statistics, and graphs on the APIs deployed in WSO2 API Manager. You can configure alerts to monitor these APIs and detect unusual activity and carry out a detailed analysis of the logs. WSO2 API Manager has an enhanced distribution of Analytics to cater to the API Manager specific scenarios that are used here to configure API-M Analytics.

Architecture



As depicted above, the gateways will publish analytics statistics directly to the Analytics Cloud over the internet. The Analytics Cloud will have regional deployments to reduce publishing latencies and honor data privacy.

Configuring API Manager Analytics

API Manager offers analytics as a cloud service using Choreo. Therefore, you need to register with the analytics cloud in order to use API Manager Analytics.

1. Sign in to Choreo (https://console.choreo.dev)
2. Register your environment
3. Configure the Gateway

https://apim.docs.wso2.com/en/4.2.0/api-analytics/choreo-analytics/getting-started-guide/

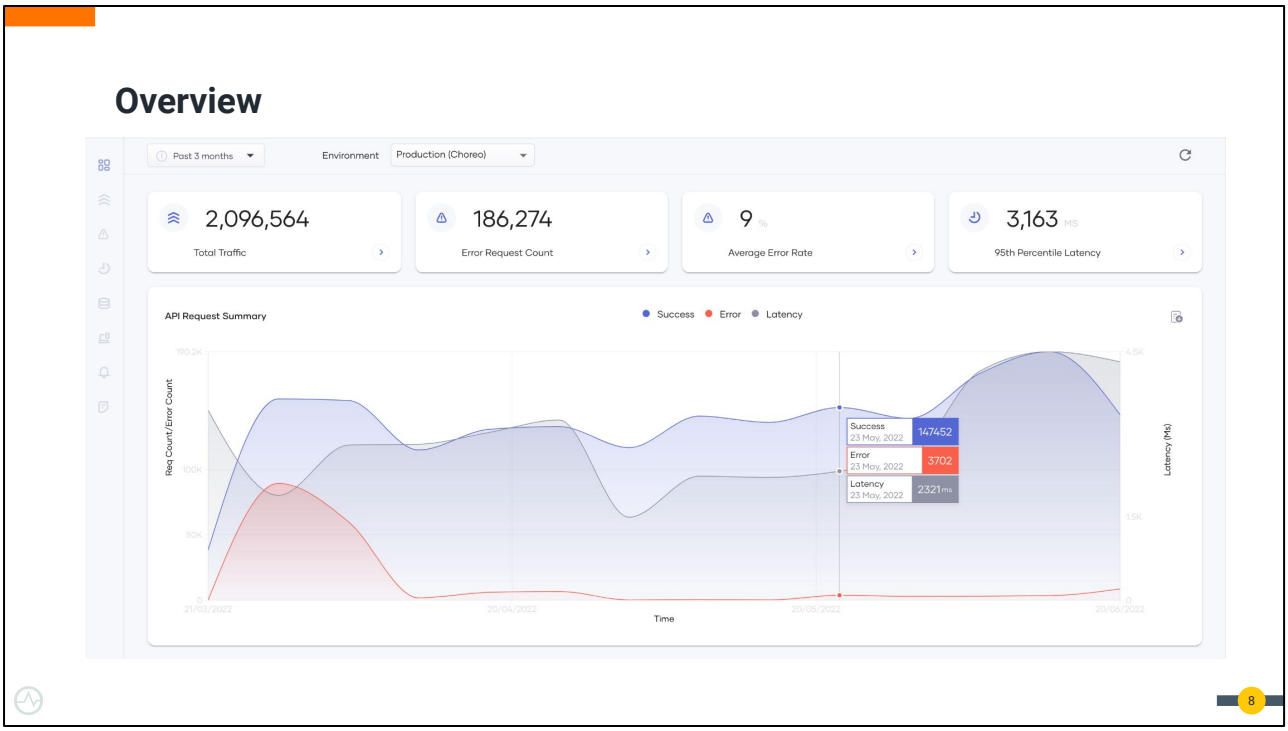
https://apim.docs.wso2.com/en/4.2.0/api-analytics/choreo-analytics/getting-started-guide/

Analytics Dashboards

Analytics Dashboard

Choreo Insights consists of several pages, which are divided based on different functional aspects (e.g., traffic, latency). You can use these pages to get the complete business analytics on your API management system.

https://wso2.com/choreo/docs/observe-and-analyze/analyze/view-api-insights/



The information displayed is as follows:

- Total Traffic: This widget displays the total traffic of the selected environment received during a given time interval. Both successful requests and failed requests are displayed.
- Error Request Count: This widget displays the total number of requests that have resulted in errors in your selected environment during the selected time range.
- Average Error Rate: This widget displays the average error rate (i.e., error count/total request count) of the selected environment for a given time interval. You can use this widget as an indicator to understand the health of the system.
- 95th Percentile Latency: This widget displays the 95th percentile of all API latencies in your selected environment for the given time interval. You can use this widget to know whether the complete system operates under given SLAs. This metric provides the first indication of slow APIs.
- API Request Summary:
- This chart displays the total successful requests, the total requests that have resulted in errors, and the latency in a timeline. The y-axis on the left displays the request count and the error count. The x-axis shows time, and the y-axis on the right shows the latency in milliseconds. The granularity of the data points is decided based on the time range you have selected. The tooltip provides the exact value of all three metrics accurately.

Dashboard Statistics

- Traffic
- Errors
- Latency
- Cache
- Devices
- Alerts
- Reports
- Geo Map

Other statistics available in the dashboard

Alerts

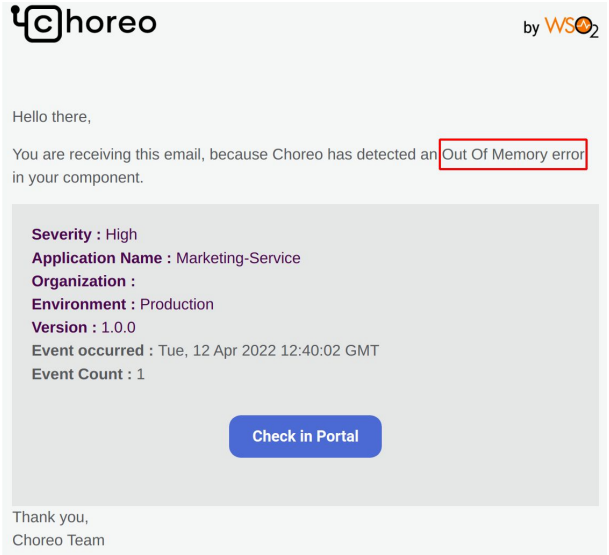
Alerts

- Configured through Choreo Insights
- Allows proactive monitoring of API ecosystem and taking corrective measures for any abnormalities you find.
- Configurable for each environment within the organization separately.
- Configured per API and can also modify/remove already-added alert configurations. Optionally, can specify a list of emails for each alert configuration.
- Subjected to a suppression policy to ensure you are not overwhelmed with duplicate alert notifications.

Alerts are notifications sent by the Choreo Alert Manager when the components that run in the production environment are not functioning as expected. Whenever a critical error (e.g., out-of-memory error) occurs, the component logs an error, and the Alert Manager notifies the members of your organization with admin rights via an email. This email contains a link to the Observability tab of the component where the metrics and logs applicable to the time interval in which the error occurred are highlighted. The Alert Publisher collects and sends alerts to Alert Manager every five minutes, which then decides when to send these alerts to the users.

Types of Alerts

- Out-of-memory alert
- Application error alert
- Anomaly alert



When an alert occurs for the first time during the alerting interval, the Choreo Alert Manager sends an alert email immediately. When there are multiple occurrences of the same type of alert for a particular component, the Choreo Alert Manager suppresses the alerts for 15 minutes and generates a single email that specifies the event count to denote how many such errors occurred during an alerting interval.

Out-of-memory alert
If the Kubernetes pod that runs your component goes out of memory, it restarts immediately. However, during that interval, the service becomes unavailable and the requests that it was processing at the time can become erroneous. Due to this, the out-of-memory error can be very adverse for your component. Therefore, when an out-of-memory error occurs, the admin members of the organization that owns the component receive an alert email

Application error alert
This alert is triggered when you use the log:printError() function in your component and the component logs an error via that. Such errors indicate that your component is unable to function as designed, and therefore you are notified via email so that you can troubleshoot them.

Anomaly alert
This alert is triggered when average latency exhibits a considerable upward shift compared to what the system observed during the last five minutes for a resource function. Latency spikes and upward latency shifts are considered high latency.

Reporting capabilities and exporting data

Publishing Data

- On-premise analytics/ELK based analytics
  - Filebeats
  - Logstash
  - Elasticsearch
  - Kibana
- Publishing analytics events to external systems
- Publishing custom analytics events data
- DataDog Based Analytics Solution

On-Premise Analytics/ELK Based Analytics
The new On-Premise Analytics solution for WSO2 API Manager will publish analytics data into a log file and that file will be used as the source for the analytics solution.

Publishing Analytics Events to External Systems¶
WSO2 API Manager allows publishing its analytics data to external systems in the same way it publishes the data to the cloud. For this purpose you need to create a custom event publisher. This guide will explain and walk through the steps required to implement, deploy, and configure a custom event publisher.

Publishing Custom Analytics Events Data
Instead of publishing already available analytics events data, it is also possible to publish custom analytics data with the existing event schema.

DataDog Based Analytics Solution
From 4.2.0 onwards https://apim.docs.wso2.com/en/4.2.0/api-analytics/on-prem/datadog-installation-guide/

Let's try it out!

Analytics