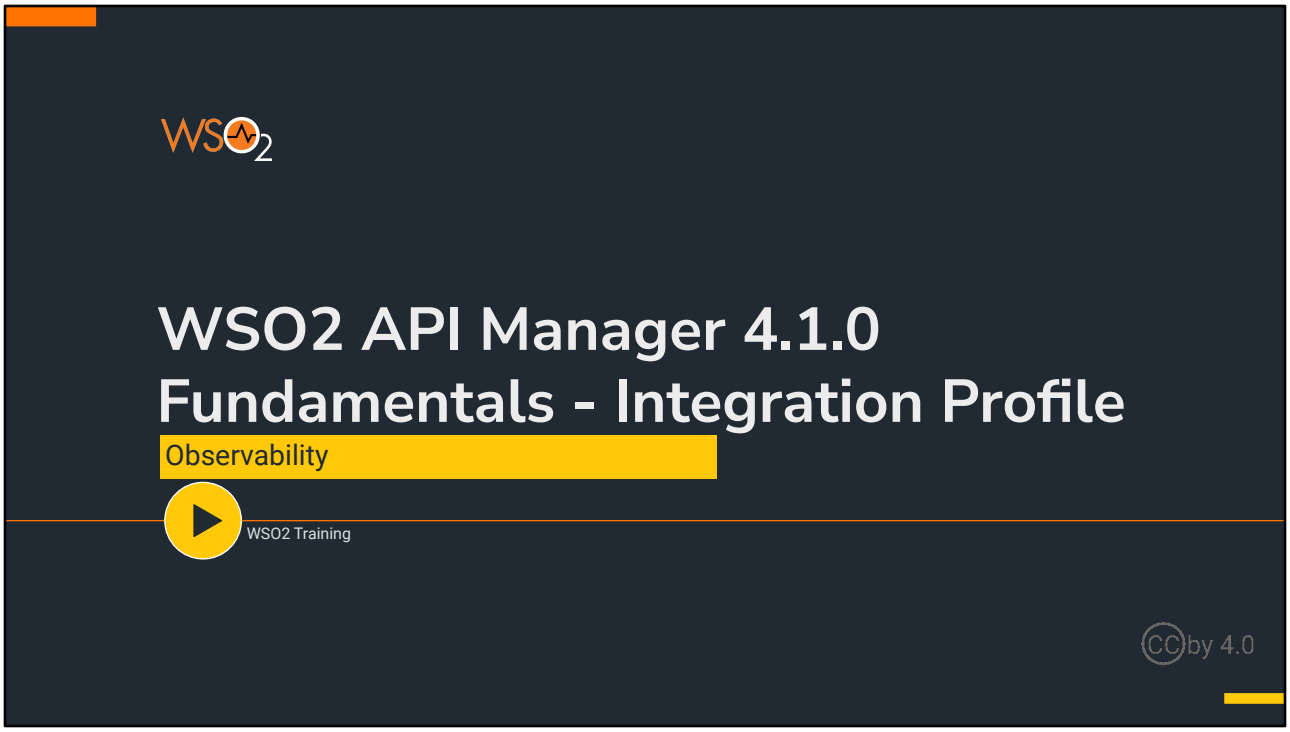

WSO2
WSO2 API Manager 4.1.0
Fundamentals - Integration Profile
Observability
WSO2 Training
CC by 4.0

Module Objective

At the end of this module, attendees will be able to:

- Understand how to setup and install observability tools for the Micro Integrator.
- Access the observability dashboards.

Observability Capabilities in WSO2 Micro Integrator

There are three types of observability capabilities in WSO2 Micro Integrator.

- **Metrics** - These help to monitor the runtime statistics of the Micro Integrator
- **Logs** - Involves monitoring of logs in the Micro Integrator.
- **Tracing** - This is used to record requests coming into the Micro Integrator, which can be used to trace the path the request took. This is done using MI stats such as the time taken at each step of the path, etc.

Observability can be viewed as a superset of monitoring where monitoring is enriched with capabilities to perform debugging and profiling through rich context, log analysis, correlation, and tracing. Modern day observability resides on three pillars of **logs**, **metrics**, and **tracing**. Modern businesses require observability systems to self-sufficiently emit their current state(overview), generate alerts for any abnormalities detected to proactively identify failures, and to provide information to find the root causes of a system failure.

Metrics

Metrics help to monitor the runtime statistics of the Micro Integrator. There are two external monitoring tools that are recommended for use.

- JMX Monitoring
- SNMP Monitoring

https://apim.docs.wso2.com/en/4.1.0/observe/micro-integrator/classic-observability-metrics/jmx-monitoring/
https://apim.docs.wso2.com/en/latest/observe/micro-integrator/classic-observability-metrics/snmp-monitoring/

Logs

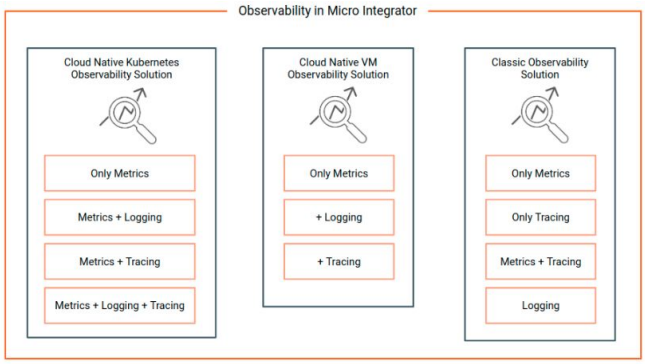
You are able to monitor the logs available in the Micro Integrator.

Log type	Description
Carbon logs	Logs on management features of the product.
Wire logs	Enable wire logs to monitor HTTP messages in MI.
Service/Event tracing logs	Used to trace services and events using a separate log file.
HTTP access logs	Used to monitor the activities related to an application's usage.
Correlation logs	Used to monitor the roundtrip of a message sent to MI.
Audit logs	Used to track the sequence of actions that affect a particular task carried out on the server.

https://apim.docs.wso2.com/en/4.1.0/observe/micro-integrator/classic-observability-logs/monitoring-logs/

Observability Solutions

WSO2 Enterprise Integrator offers two observability solutions referred to as the cloud-native observability deployment and classic observability deployment.



As shown in this diagram, the observability solutions can be setup depending on your capability requirement. For example, you can set up an observability solution on the cloud to have Metrics and Tracing only.

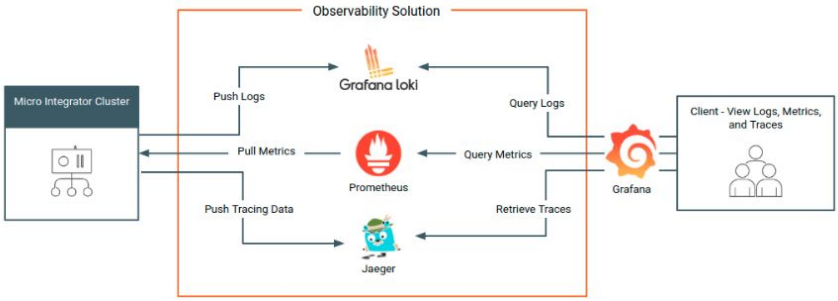
Observability Technology

The following are the technologies used for Observability solutions in WSO2 Micro Integrator.

Feature	Cloud-native Observability Technology	Classic Observability Technology
Metrics	Prometheus	EI Analytics
Logging	Log4j2, Fluent-Bit, Grafana Loki	Log4j2
Tracing	Jaeger	EI Analytics
Visualization	Grafana	EI Analytics Dashboard

Cloud-Native Observability - Complete Setup

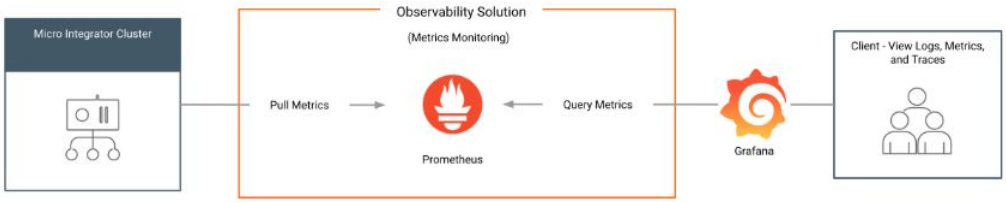
- The cloud-native observability solution includes metrics monitoring, log monitoring, and message tracing capabilities.
- You can set up different flavours of this solution depending on your requirement.



The complete **cloud-native** observability solution for your Micro Integrator deployment includes **metrics monitoring**, **log monitoring**, and **message tracing** capabilities.

Cloud-Native Observability - Minimum Offering

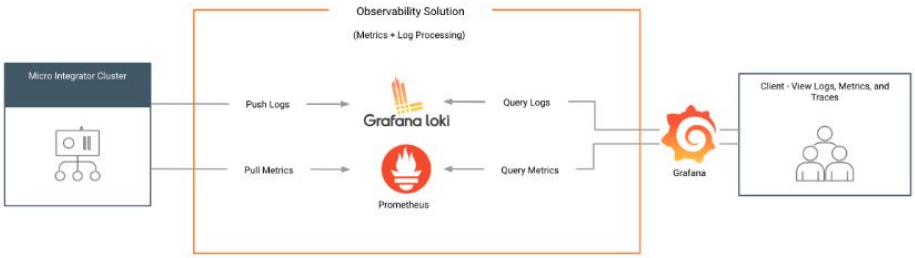
- The cloud-native observability solution comes with minimum capabilities to monitor metrics.
- This is done using Prometheus.
- The dashboard can be viewed via Grafana.



The complete **cloud-native** observability solution for your Micro Integrator deployment includes **metrics monitoring**, **log monitoring**, and **message tracing** capabilities.

Cloud-Native Observability - With Log Processing Addon

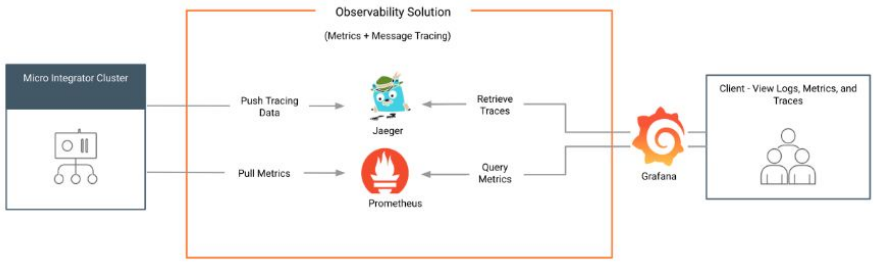
- Log processing can be added on to the setup with minimum capabilities.
- This is done using Fluent Bit and Grafana Loki is the log aggregator.



The complete **cloud-native** observability solution for your Micro Integrator deployment includes **metrics monitoring**, **log monitoring**, and **message tracing** capabilities.

Cloud-Native Observability - With Message Tracing Addon

- Message tracing can be added on to the setup with minimum capabilities.
- This is done using Jaeger.



The complete **cloud-native** observability solution for your Micro Integrator deployment includes **metrics monitoring**, **log monitoring**, and **message tracing** capabilities.

Let's try it out!

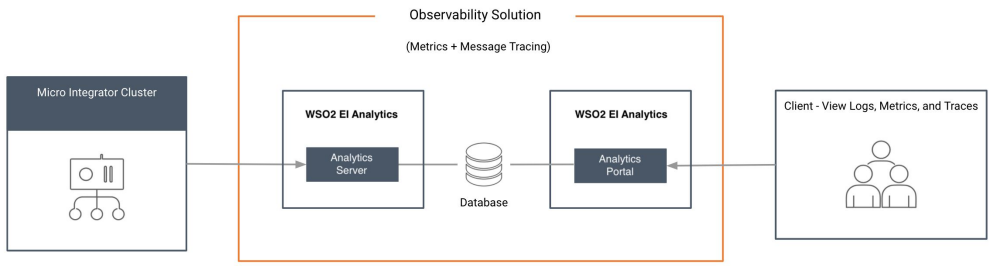
Cloud-Native Observability on a VM

Let's try it out!

Cloud-Native Observability on Kubernetes

Classic Observability

- The classic observability solution can have only metrics, only tracing, or a combination of both.
- Logs cannot be viewed in a dashboard for classic observability.



Let's try it out!

Classic observability: Using WSO2 EI Analytics for Statistics Monitoring and Tracing