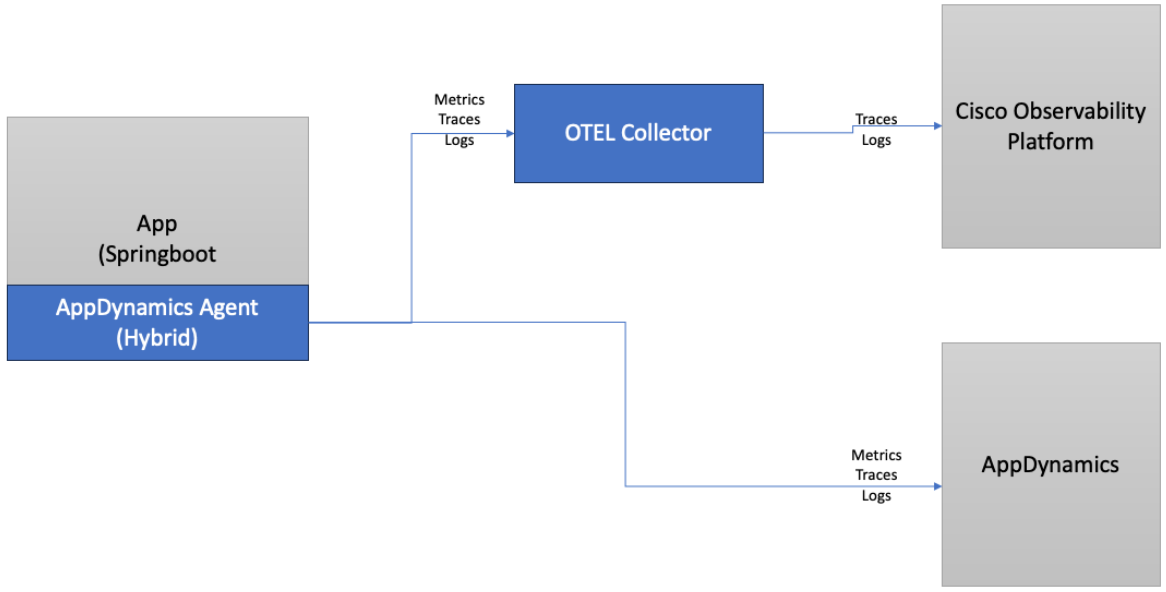
Instrumentation with AppDynamics Hybrid java agent

Architecture



Lab

In this lab we will configure the hybrid mode in the AppDynamics agent. This will make the agent send information to AppDynamics and to Cisco Observability Platform at the same time. Including Logs!!

The first step is to download AppDynamics Hybrid Agent from the link below.
https://accounts.appdynamics.com/downloads

Unzip the agent and name the folder *appd_agent* inside the *lab2_appd_hybrid_agent* folder.

This a useful approach when you already have lots of agents deployed and what to expand your observability to other platforms. In addition to that it enables log analytics

Download the executable file from the link below and place it in the *lab2_appd_hybrid_agent* folder.
https://github.com/lof000/otel-cco-labs/releases/download/v1.0/banking-2.1.0.jar

Edit the run.sh file and add the information to connect to your AppDynamics Controller. Also, remember to replace YOUR_ID with your unique id.

```
#ENV
ID=<YOUR_ID>>

export APPDYNAMICS_AGENT_ACCOUNT_ACCESS_KEY=
export APPDYNAMICS_AGENT_ACCOUNT_NAME=
export APPDYNAMICS_CONTROLLER_HOST_NAME=
export APPDYNAMICS_CONTROLLER_PORT=443
export APPDYNAMICS_CONTROLLER_SSL_ENABLED=true
export APPDYNAMICS_AGENT_APPLICATION_NAME=bankLab2$ID
export APPDYNAMICS_AGENT_TIER_NAME=bankingDemo
export APPDYNAMICS_AGENT_NODE_NAME=api
```

Now let's start the application instrumented with AppDynamics agent in its default config.
Start app.

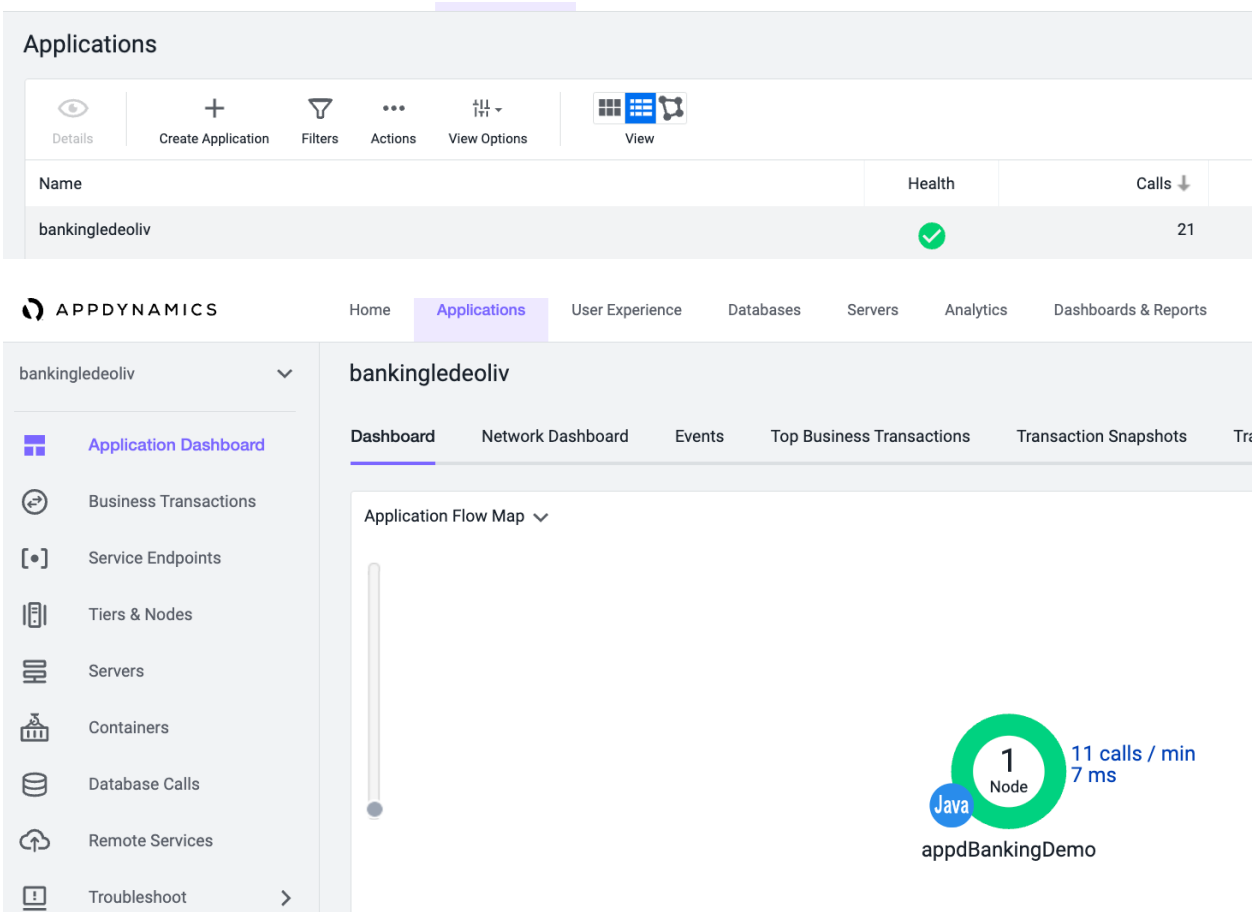
```
./run.sh
```

```
→  lab2-appd_hybrid_agent ./run.sh
Picked up JAVA_TOOL_OPTIONS: -javaagent:appd_agent/javaagent.jar
Java 9+ detected, booting with Java9Util enabled.
Full Agent Registration Info Resolver found env variable [APPDYNAMICS_AGENT_APPLICATION_NAME] for application name [bankingledeoliv]
Full Agent Registration Info Resolver found env variable [APPDYNAMICS_AGENT_TIER_NAME] for tier name [appdBankingDemo]
Full Agent Registration Info Resolver found env variable [APPDYNAMICS_AGENT_NODE_NAME] for node name [api]
Full Agent Registration Info Resolver using selfService [false]
Full Agent Registration Info Resolver using selfService [false]
Full Agent Registration Info Resolver using ephemeral node setting [false]
Full Agent Registration Info Resolver using application name [bankingledeoliv]
Full Agent Registration Info Resolver using tier name [appdBankingDemo]
Full Agent Registration Info Resolver using node name [api]
Install Directory resolved to[/Users/ledeoliv/WORK/LABS/GALICIA/lab2-appd_hybrid_agent/appd_agent]
getBootstrapResource not available on ClassLoader
Class with name [com.ibm.lang.management.internal.ExtendedOperatingSystemMXBeanImpl] is not available in classpath, so will ignore export access.
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[DEBUG]: JavaAgent - Setting AgentClassLoader as Context ClassLoader
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: JavaAgent - Low Entropy Mode: Attempting to swap to non-blocking PRNG algorithm
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: JavaAgent - UUIDPool size is 10
Agent conf directory set to [/Users/ledeoliv/WORK/LABS/GALICIA/lab2-appd_hybrid_agent/appd_agent/ver24.1.0.35445/conf]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: JavaAgent - Agent conf directory set to [/Users/ledeoliv/WORK/LABS/GALICIA/lab2-appd_hybrid_agent/appd_agent/ver24.1.0.35445/co
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[DEBUG]: AgentInstallManager - Full Agent Registration Info Resolver is running
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver found env variable [APPDYNAMICS_AGENT_APPLICATION_NAME] for applica
liv]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver found env variable [APPDYNAMICS_AGENT_TIER_NAME] for tier name [app
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver found env variable [APPDYNAMICS_AGENT_NODE_NAME] for node name [api
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver using selfService [false]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver using selfService [false]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver using ephemeral node setting [false]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver using application name [bankingledeoliv]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver using tier name [appdBankingDemo]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Full Agent Registration Info Resolver using node name [api]
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[DEBUG]: AgentInstallManager - Full Agent Registration Info Resolver finished running
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Agent runtime directory set to [/Users/ledeoliv/WORK/LABS/GALICIA/lab2-appd_hybrid_agent/appd_agent/ver24
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Agent node directory set to [api]
Agent runtime conf directory set to /Users/ledeoliv/WORK/LABS/GALICIA/lab2-appd_hybrid_agent/appd_agent/ver24.1.0.35445/conf
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: AgentInstallManager - Agent runtime conf directory set to /Users/ledeoliv/WORK/LABS/GALICIA/lab2-appd_hybrid_agent/appd_agent/v
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: JavaAgent - JDK Compatibility: 1.8+
[AD Agent init] Fri Feb 02 10:50:57 BRT 2024[INFO]: JavaAgent - Using Java Agent Version [Server Agent #24.1.0.35445 v24.1.0 GA compatible with 4.4.1.0 rac18d66d990a3be051820109be
```

Put some load.

```
./load.sh
```

Check AppDynamics.



So far it is business as usual. Now we will change the agent configuration to enable the hybrid mode.

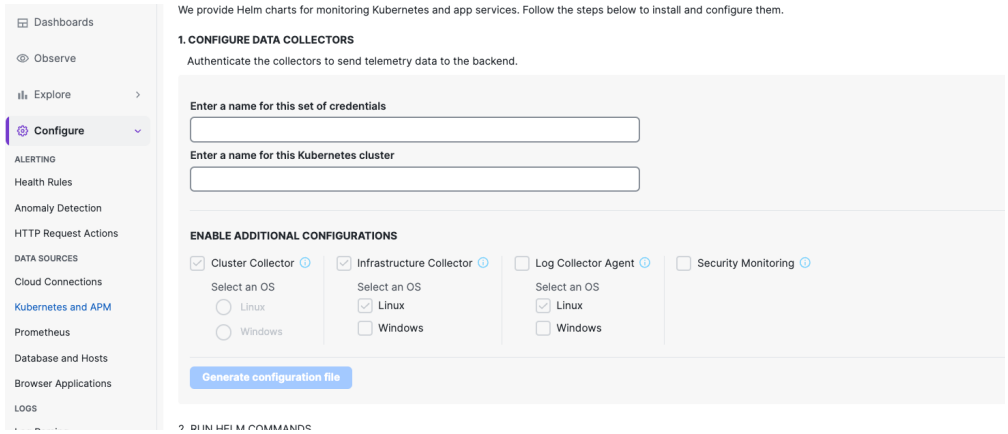
Stop the app.

```
CTRL + C
```

Enable OTEL features in the AppDynamics java agent.

The AppDynamics agent needs to send the data to a OTEL Collector, and the collector sends them to Cisco Observability Platform. To accomplish that we need to prepare the collector configuration.

Edit the *otel-collector-config.yaml* leaving it like the sample below. The information to connect to Cisco Observability Platform can be found in the file you download here.




```yaml
receivers:
  otlp:
    protocols:
      grpc:
      http:

exporters:
  logging:
    verbosity: detailed
  jaeger:
    endpoint: jaeger:14250
    tls:
      insecure: true

  otlphttp:
    auth:
      authenticator: oauth2client
    traces_endpoint: https://<tenant_host>/data/v1/trace
    logs_endpoint: https://<tenant_host>/data/v1/logs

processors:
  batch: #### Optional for trace batching for AppDynamics Cloud
    send_batch_max_size: 1000
    send_batch_size: 1000
```

```
    timeout: 10s

extensions: #### Mandatory for AppDynamics Cloud
  oauth2client:
    client_id: xxxx
    client_secret: xxxx
    token_url: https://tenant_host>auth/xxxxx/default/oauth2/token

service:
  extensions: #### Mandatory for AppD Cloud
    - oauth2client
  pipelines:
    traces:
      receivers: [otlp]
      processors: [batch]
      exporters: [logging,jaeger,otlphttp]
    metrics:
      receivers: [otlp]
      exporters: [logging]
    logs:
      receivers: [otlp]
      exporters: [logging,otlphttp]
```

Observe that the otlphttp exporter is a little different from the previous lab. And now we also have a new extension called outh2client. This is because now the collector will send the information do Cisco Observability Platform.

Start the collector.

```
docker-compose up -d
```

Now we will change the agent configuration to enable OTEL communication. Remember to inform your unique id.

Edit run.sh and the OTEL variables.

```
#ENV VARIABLES FOR OTEL
export OTEL_EXPORTER_OTLP_ENDPOINT=http://localhost:4317
export OTEL_RESOURCE_ATTRIBUTES="service.name=banking,service.namespace=bankLab2$ID"

#APM AGENT VARIABLES
export JAVA_TOOL_OPTIONS="-javaagent:appd_agent/javaagent.jar"

java -Dappdynamics.opentelemetry.enabled=true -jar banking-2.1.0.jar
```

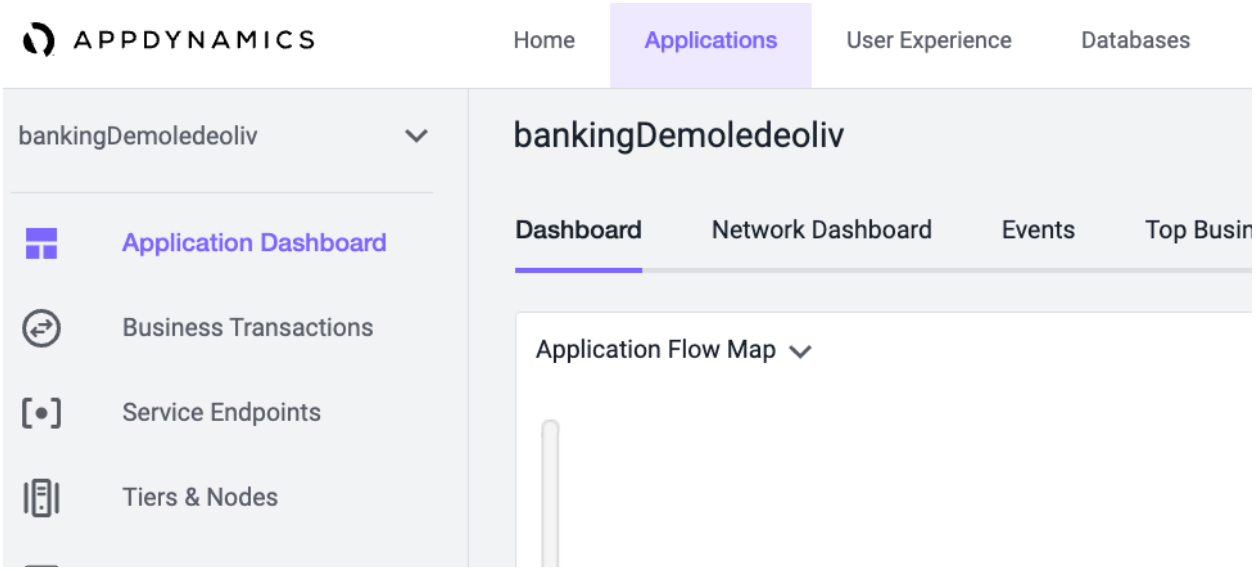
Run the app.

```
./run.sh
```

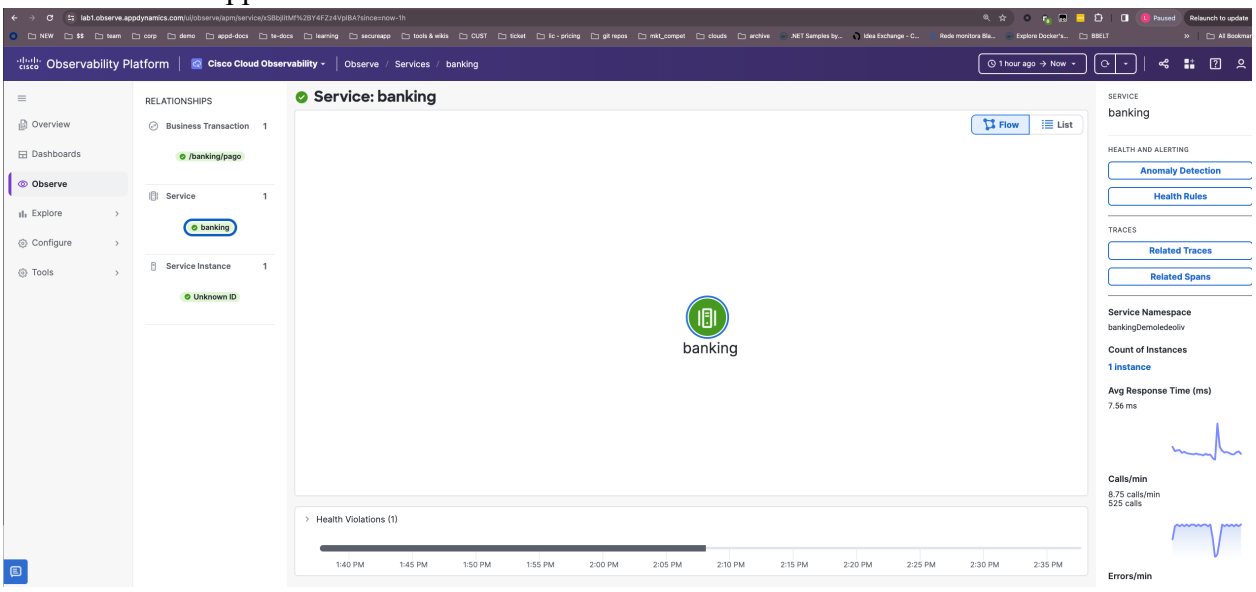
Put some load.

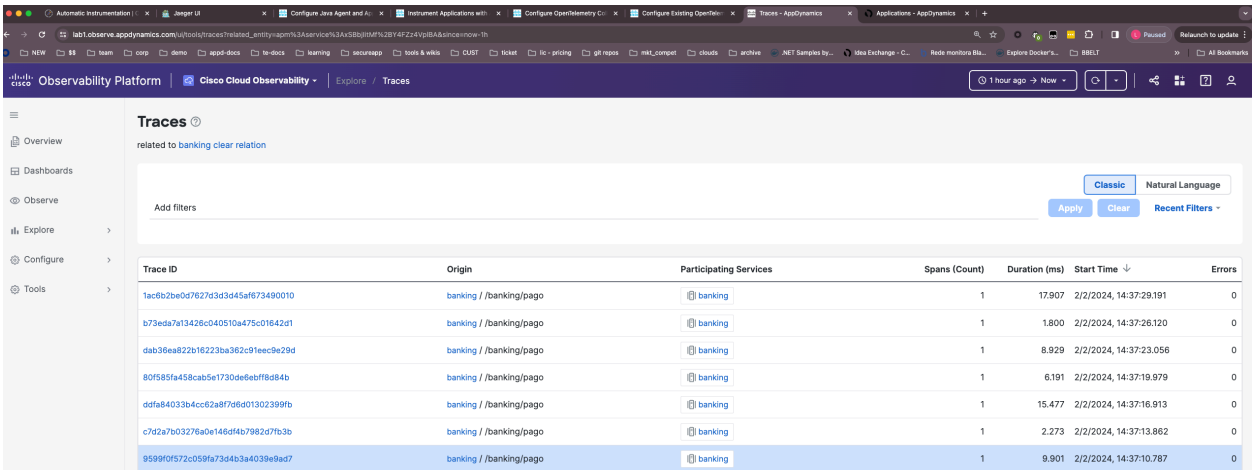
```
./load.sh
```

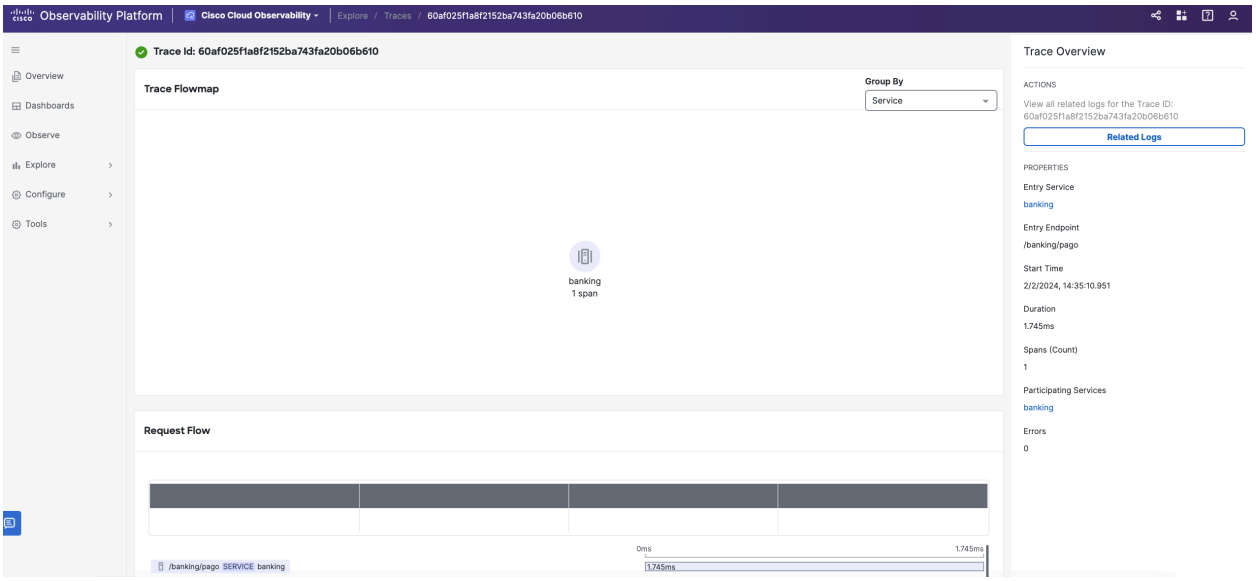
Check the application in AppDynamics.

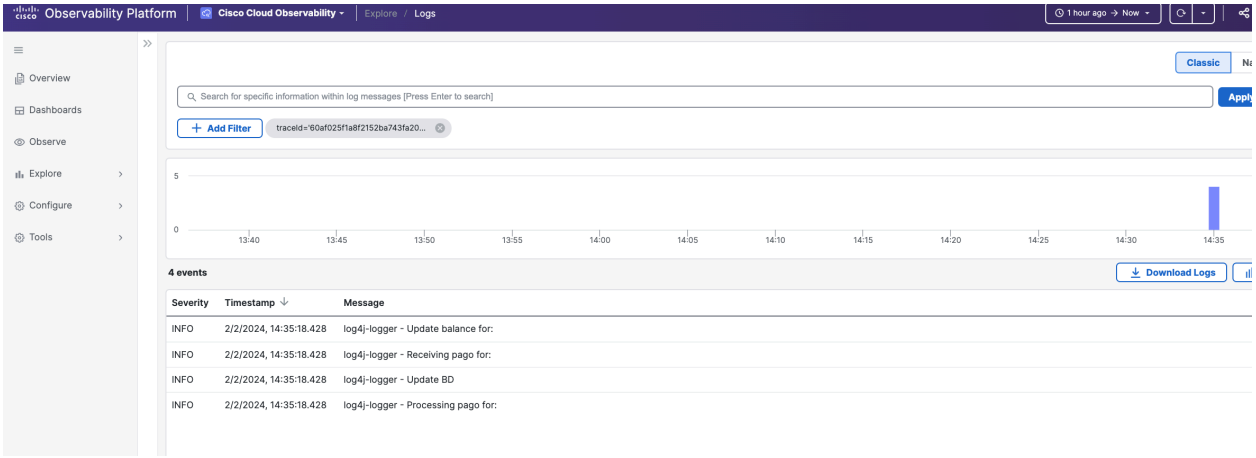


Check the same application in CCO.




Observability Platform
Cisco Cloud Observability
Explore / Traces
1 hour ago → Now
Overview
Dashboards
Observe
Explore
Configure
Tools
Traces
related to banking clear relation
Classic
Natural Language
Add filters
Apply
Clear
Recent Filters
Trace ID
Origin
Participating Services
Spans (Count)
Duration (ms)
Start Time
Errors
1ac6b2be0d7627d3d3d45af673490010 banking / /banking/pago banking 1 17.907 2/2/2024, 14:37:29.191 0
b73eda7a13426c040510a475c01642d1 banking / /banking/pago banking 1 1.800 2/2/2024, 14:37:26.120 0
dab36ea822b16223ba362c91eec9e29d banking / /banking/pago banking 1 8.929 2/2/2024, 14:37:23.056 0
80f585fa458cab5e1730de6ebff8d84b banking / /banking/pago banking 1 6.191 2/2/2024, 14:37:19.979 0
ddfa84033b4cc62a8f7d6d01302399fb banking / /banking/pago banking 1 15.477 2/2/2024, 14:37:16.913 0
c7d2a7b03276a0e146df4b7982d7fb3b banking / /banking/pago banking 1 2.273 2/2/2024, 14:37:13.862 0
9599f0f572c059fa73d4b3a4039e9ad7 banking / /banking/pago banking 1 9.901 2/2/2024, 14:37:10.787 0


Observability Platform
Cisco Cloud Observability
Explore / Traces / 60af025f1a8f2152ba743fa20b06b610
Trace Id: 60af025f1a8f2152ba743fa20b06b610
Trace Flowmap
Group By
Service
banking
1 span
Request Flow
/banking/pago SERVICE banking
0ms
1.745ms
1.745ms
Trace Overview
ACTIONS
View all related logs for the Trace ID: 60af025f1a8f2152ba743fa20b06b610
Related Logs
PROPERTIES
Entry Service
banking
Entry Endpoint
/banking/pago
Start Time
2/2/2024, 14:35:10.951
Duration
1.745ms
Spans (Count)
1
Participating Services
banking
Errors
0


Observability Platform
Cisco Cloud Observability
Explore / Logs
1 hour ago → Now
Overview
Dashboards
Observe
Explore
Configure
Tools
Classic
Search for specific information within log messages [Press Enter to search]
Add Filter
traceId='60af025f1a8f2152ba743fa20...
5
0
13:40
13:45
13:50
13:55
14:00
14:05
14:10
14:15
14:20
14:25
14:30
14:35
4 events
Download Logs
Severity
Timestamp
Message
INFO 2/2/2024, 14:35:18.428 log4j-logger - Update balance for:
INFO 2/2/2024, 14:35:18.428 log4j-logger - Receiving pago for:
INFO 2/2/2024, 14:35:18.428 log4j-logger - Update BD
INFO 2/2/2024, 14:35:18.428 log4j-logger - Processing pago for: