Avaya Analytics™

REST & WebSocket Open Interface API Guide

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AVAYA ANALYTICS REAL TIME OPEN INTERFACE SOFTWARE DEVELOPMENT KIT LICENSE AGREEMENT

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Licensee shall comply with all applicable laws and regulations, including without limitation those applicable to data privacy, intellectual property, trade secret, and fraud. Licensee is advised that the Technical Information is of U.S. origin and subject to the U.S. Export Administration Regulations ("EAR") and may be subject to applicable local country import/export laws and regulations. Diversion contrary to U.S. and/or applicable local country law and/or regulation is prohibited. Licensee agrees not to directly or indirectly export, re-export, import, download, or transmit the Technical Information to any country, end user or for any use that is contrary to applicable U.S. and/or local country regulation or statute (including but not limited to those countries embargoed by the U.S. government). Licensee represents that any governmental agency has not issued sanctions against Licensee or otherwise suspended, revoked or denied Licensee's import/export privileges. Licensee agrees not to use or transfer the Technical Information for any use relating to nuclear, chemical or biological weapons, or missile technology, unless authorized by the U.S. and/or any applicable local government by regulation or specific written license. Additionally, Licensee is advised that the Technical Information may contain encryption algorithm or source code that may not be exported to government or military end users without a license issued by the U.S. Bureau of Industry and Security and any other country's governmental agencies, where applicable.

13.0 WAIVER.

The failure to assert any rights under this Agreement, including, but not limited to, the right to terminate in the event of breach or default, will not be deemed to constitute a waiver of the right to enforce each and every provision of this Agreement in accordance with their terms.

14.0 SEVERABILITY.

If any provision of this Agreement is determined to be unenforceable or invalid, this Agreement will not be rendered unenforceable or invalid as a whole, and the provision will be changed and interpreted so as to best accomplish the objectives of the original provision within the limits of applicable law.

15.0GOVERNING LAW AND DISPUTE RESOLUTION.

15.1 Governing Law. This Agreement and any dispute, claim or controversy arising out of or relating to this Agreement ("Dispute"), including without limitation the formation, interpretation, breach or termination of this Agreement, or any issue regarding whether a Dispute is subject to arbitration under this Agreement, will be governed by New York State laws, excluding conflict of law principles, and the United Nations Convention on Contracts for the International Sale of Goods.

15.2 Dispute Resolution. Any Dispute will be resolved in accordance with the provisions of this Section 15. The disputing party shall give the other party written notice of the Dispute in accordance with the notice provision of this Agreement. The parties will attempt in good faith to resolve each controversy or claim within 30 days, or such other longer period as the parties may mutually agree, following the delivery of such notice, by negotiations between designated representatives of the parties who have dispute resolution authority.

15.3 Arbitration of Non-US Disputes. If a Dispute that arose anywhere other than in the United States or is based upon an alleged breach committed anywhere other than in the United States cannot be settled under the procedures and within the timeframe set forth in Section 15.2, it will be conclusively determined upon request of either party by a final and binding arbitration proceeding to be held in accordance with the Rules of Arbitration of the International Chamber of Commerce by a single arbitrator appointed by the parties or (failing agreement) by an arbitrator appointed by the President of the International Chamber of Commerce (from time to time), except that if the aggregate claims, cross claims and counterclaims by any one party against the other party exceed One Million US Dollars at the time all claims, including cross claims and counterclaims are filed, the proceeding will be held in accordance with the Rules of Arbitration of the International Chamber of Commerce by a panel of three arbitrator(s) appointed in accordance with the Rules of Arbitration of the International Chamber of Commerce. The arbitration will be conducted in the English language, at a location agreed by the parties or (failing agreement) ordered by the arbitrator(s). The arbitrator(s) will have authority only to award compensatory damages within the scope of the limitations of Section 8 and will not award punitive or exemplary damages. The arbitrator(s) will not have the authority to limit, expand or otherwise modify the terms of this Agreement. The ruling by the arbitrator(s)) will be final and binding on the parties and may be entered in any court having jurisdiction over the parties or any of their assets. The parties will evenly split the cost of the arbitrator(s)' fees, but Avaya and Customer will each bear its own attorneys' fees and other costs associated with the arbitration. The parties, their representatives, other participants and the arbitrator(s) will hold the existence, content and results of the arbitration in strict confidence to the fullest extent permitted by law. Any disclosure of the existence, content and results of the arbitration will be as limited and narrowed as required to comply with the applicable law. By way of illustration, if the applicable law mandates the disclosure of the monetary amount of an arbitration award only, the underlying opinion or rationale for that award may not be disclosed.

15.4 Choice of Forum for US Disputes. If a Dispute by one party against the other that arose in the United States or is based upon an alleged breach committed in the United States cannot be settled under the procedures and within the timeframe set forth in Section 15.2, then either party may bring an action or proceeding solely in either the Supreme Court of the State of New York, New York County, or the United States District Court for the Southern District of New York. Except as otherwise stated in Section 15.3 each party consents to the exclusive jurisdiction of those courts, including their appellate courts, for the purpose of all actions and proceedings arising out of or relating to this Agreement.

15.5 Injunctive Relief. Nothing in this Agreement will be construed to preclude either party from seeking provisional remedies, including, but not limited to, temporary restraining orders and preliminary injunctions from any court of competent jurisdiction in order to protect its rights, including its rights pending arbitration, at any time. The parties agree that the arbitration provision in Section 15.3 may be enforced by injunction or other equitable order, and no bond or security of any kind will be required with respect to any such injunction or order.

15.6 Time Limit. Actions on Disputes between the parties must be brought in accordance with this Section within 2 years after the cause of action arises.

16.0 AGREEMENT IN ENGLISH.

The parties confirm that it is their wish that the Agreement, as well as all other documents relating hereto, including all notices, have been and shall be drawn up in the English language only. Les parties aux présentes confirment leur volonté que cette convention, de même que tous les documents, y compris tout avis, qui s'y rattachent, soient rédigés en langue anglaise.

17.0 ENTIRE AGREEMENT.

This Agreement, its exhibits, schedules and other agreements or documents referenced herein, constitute the full and complete understanding and agreement between the parties and supersede all contemporaneous and prior understandings, agreements and representations relating to the subject matter hereof. No modifications, alterations or amendments shall be effective unless in writing signed by both parties to this Agreement.

18. REDISTRIBUTABLE CLIENT FILES.

The list of SDK client files that can be redistributed, if any, are in the SDK in a file called Redistributable.txt.

Schedule 1 to Avaya SDK License Agreement
Third Party Notices

1. **CODECS**: WITH RESPECT TO ANY CODECS IN THE SDK, YOU ACKNOWLEDGE AND AGREE YOU ARE RESPONSIBLE FOR ANY AND ALL RELATED FEES AND/OR ROYALTIES, IF ANY. IT IS YOUR RESPONSIBILITY TO CHECK.

THE H.264 (AVC) CODEC IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO: (I) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (II) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION FOR THE H.264 (AVC) CODEC MAY BE OBTAINED FROM MPEG LA, L.L.C. SEE HTTP://WWW.MPEGLA.COM.

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Summary

The Avaya Analytics™ Streams Event Processors produce real time measures that are published to authenticated subscribers via the REST & WebSocket interfaces.

The REST interface handles administration and subscription requests whereas the WebSocket is purely used as a transport mechanism for real-time data.

The Event Processor applications produce measure data at a dimensional level and send updated real time measure values to Kafka topics which are filtered by the Data Publisher and then forwarded to WebSocket endpoints.

REST interface

This interface is available over HTTPS and provides the following APIs.

- User login
- List sources
- List producers
- Translations of the measure names for a given producer (multiple locales supported)
- Subscribe/unsubscribe to producers
- List dimensional data (list of agents)

WebSocket interface

This interface is available over HTTPS/WSS and provides the following functionalities:

- Read data from the Kafka topics of all the measure producers.
- Filter data as per subscriptions

Measure Processors

- Read UCM & UCA data from Kafka (inbound) topics
- Calculate metrics
- Write metrics in Kafka (outbound) topics
- Register as a measure producer with the REST interface.

Introduction

Intended audience

This document is for third-party vendors who want to develop applications that rely on real-time measure data feeds from Avaya Analytics™.

The protocols for subscribing for and consuming real-time data are described here.

Purpose

This document describes a new Open Interface for retrieving real-time data from Avaya Analytics™ 4.1.2.0.
This Open Interface is based on a combination of REST and WebSocket technologies and will replace the existing Open Interface based on Kafka in a future release.

Status the Kafka Open Interface.

Avaya will no longer make commercially available the Kafka interface for new sale opportunities once Avaya Oceana 3.8.1/Analytics 4.1.1 becomes generally available.

Existing Avaya Oceana/Analytics customers will continue to be supported.

Third-party vendors who plan to write an application connecting to Avaya Analytics should use the REST & WebSocket interface.

Compatibility with the Kafka Open Interface

The APIs for subscribing and consuming events introduced in the REST & WebSocket Open Interface are fundamentally different to the APIs defined in the Kafka Open Interface for Avaya Analytics™.

Third-party applications that already use the Kafka Open Interface are therefore not compatible with the REST & WebSocket Open Interface and will need to be rewritten to make use of it.

The format of the real-time data exposed by both Open Interfaces is identical.

Pre-Requisites

The reader of this document must be familiar with:

- Maintaining and Troubleshooting Avaya Analytics™ for Avaya Oceana® solution. See Applicable Documentation for Avaya Analytics™.
- Oceana® Call Routing Features and be familiar with Oceana® Attribute Based Routing and Administration of agents with account and attributes. See Applicable Documentation for Avaya Oceana® solution.
- Kubernetes. https://kubernetes.io/
- REST APIs. https://www.redhat.com/en/topics/api/what-is-a-rest-api
- WebSocket protocol. https://tools.ietf.org/html/rfc6455

Licensing

Avaya Analytics Real-Time interface is licensed as an add on option for Avaya Analytics that allows for a maximum of 5 subscriptions on Avaya Analytics Real-Time data.

Licenses must be purchased on a per site basis.

For access keys contact your local Avaya representative.

Support

For support contact http://avaya.com/devconnect

Terminology and Acronyms

Term	Meaning
ACM	Avaya Control Manager
Avaya Analytics™	Reporting and Analytics platform
AWA	Avaya Work Assignment
BHCC	Busy Hour Call Completion
Avaya Breeze® platform	Platform for deployment of snap-ins, used to manage a Contact Center
Crunchy DB	Crunchy Data PostgreSQL database
CCM	Cluster Control Manager
EWT	Expected Wait Time
ITD	Interval To Date
JMS	Java Message Service
JSON	JavaScript Object Notation
REF	Reliable Event Framework
UCA	Unified Collaboration Administration
UCAM	Universal Configuration and Management
UCID	Universal Call Identifier
UCM	Unified Collaboration Model

Avaya Analytics™ Overview

Architecture Overview

Avaya Analytics™ is deployed on top of Kubernetes, an open-source container orchestration solution.

At a high level, Avaya Analytics™ consumes events from the Avaya Oceana solution and is composed of the following services.

1. Event Processor Applications (event processors)
2. Kafka Real-Time Open Interface (Kafka open interface - to be deprecated)
3. Apache Kafka (real-time bus)
4. Publisher (WebSocket interface)
5. REST interface
6. Redis (in-memory database)
7. Authentication service (bridge to breeze authentication service)
8. Crunchy DB (historical data store)
9. Avaya Analytics Historical Reporting (presentation layer)

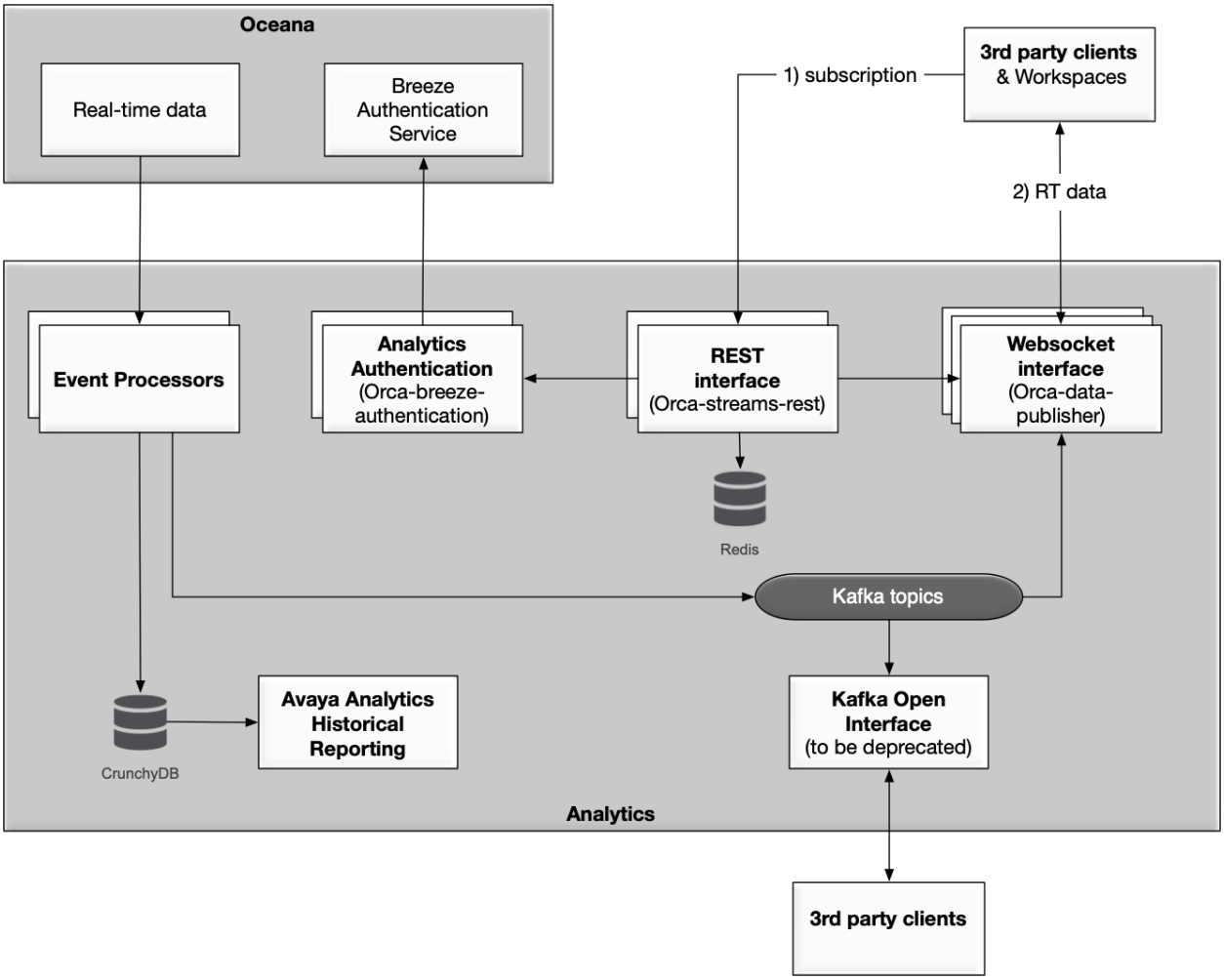


Figure 1 – Avaya Analytics™ Architecture

The Kafka Open Interface shown in the diagram will be deprecated in a future release of Avaya Analytics™.

The Open Interface described in this document is composed of two entities:

2. The REST interface.
3. The WebSocket interface.

Event Processor

The Event Processors consist of a set of Kubernetes pods which process events received from the Avaya Oceana solution and to calculate measures.

Each measure is independent and is defined by specific events relating to that measure.

Real Time and Historical Data Store

The Event Processor (EP) pushes data to a Crunchy database deployed as part of Avaya Analytics™. Historical data is pushed to the Avaya Analytics™ data store while the real time data is pushed to Kafka topics.

The initial contact point for the push of Historical data is a staging area which has a simple schema consisting of tables (representing the dimensional combinations output by the EP), where each table consists of a number of columns (representing the specific measures output by the EP within those dimensions).

Persisted Historical data includes:

- 15-minute fixed interval records
- Contact Detail Records

Subsequent processing aggregates the 15-minute fixed interval to larger grains (e.g. daily, weekly, and monthly). Other processing may also add further processing to generate new measures as the data is moved from the staging area through to an Analytics data mart which acts as the data provider for the presentation layer.

Presentation Layer

Avaya Analytics Historical Reporting is the historical data presentation layer for Avaya Analytics™. This component includes internal modelling components to map from the physical data mart schema and JMS topics through a business model and finally into several Subject Areas - these are the artifacts that the report creator and consumer of Avaya Analytics Historical Reporting visualizations interacts with.

Avaya Analytics Historical Reporting acts as a repository of their respective models, and also their visual widgets and reports (whether output to a screen, printed or emailed).

Avaya Analytics server

The Event Processor applications write real time data to dedicated Kafka topics on the Analytics server.

The Kafka Open Interface application manages the access to the real time data from third-party clients. The mechanisms used by third-party clients to subscribe and consume data is described in the Avaya Analytics™ Real Time Kafka Open Interface API Guide.

The REST/WebSocket Open Interface exposes a REST interface for querying the list of producers configured in the system and subscribing for their data feed. The WebSocket interface transfers the real-time data to the third-party clients.

Workspaces presentation layer

Workspaces uses the REST interface to retrieve the list of producers configured in the system and to subscribe to the data feed. The real-time data generated on the Kafka topics by the measure producers are transferred to the WebSocket endpoint where the presentation layer is registered as a consumer.

Measures

For the full list of Measures available please refer to the *Avaya Analytics™ Data Dictionary 4.1.2.0*

REST & WebSocket Open Interface Specification

Overview

The Avaya Analytics™ Streams Event Processors produce real time measures that are published to authenticated subscribers via the REST/WebSocket interface.

The REST interface handles administration and subscription requests whereas the WebSocket is purely used as a transport mechanism for real-time data.

The Event Processor applications produce measure data at a dimensional level and send updated real time measure values to Kafka topics which are filtered by the Data Publisher and then forwarded to WebSocket endpoints.

High Level Architecture

At a high level, the REST/WebSocket interface relies on 2 main components, the REST interface and the WebSocket (a.k.a data-publisher) interface.

However, more components are a play and below is a short presentation of their responsibilities.

REST interface

This interface is available over HTTPS and provides the following APIs.

1. User login
2. List sources
3. List producers
4. Provide translations of the measure names for a given producer (multiple locales supported)
5. Subscribe/unsubscribe to producers
6. List dimensional data (list of agents)

WebSocket interface

This interface is available over HTTPS and provides the following functionalities:

1. Read data from the Kafka topics of all the measure producers.
2. Filter data as per subscriptions

Redis

1. Store information regarding the measure producers on behalf of the REST interface (Sources, producers, dictionaries, dimension data)
2. Store third-party client Subscription Redirect Requests on behalf of the Data Publisher.

Third-party applications do not interact directly with the Redis database.

Orca-breeze-authentication

1. Connect to the Avaya Oceana Breeze Authentication for authenticating users.
2. Validate tokens

This component is used by the REST interface to login users and validate authentication tokens. Third-party applications do not interact directly with it.

Measure Processors

1. Read UCM & UCA data from Kafka (inbound) topics
2. Calculate metrics
3. Write metrics in Kafka (outbound) topics
4. Register as a measure producer with the REST interface.

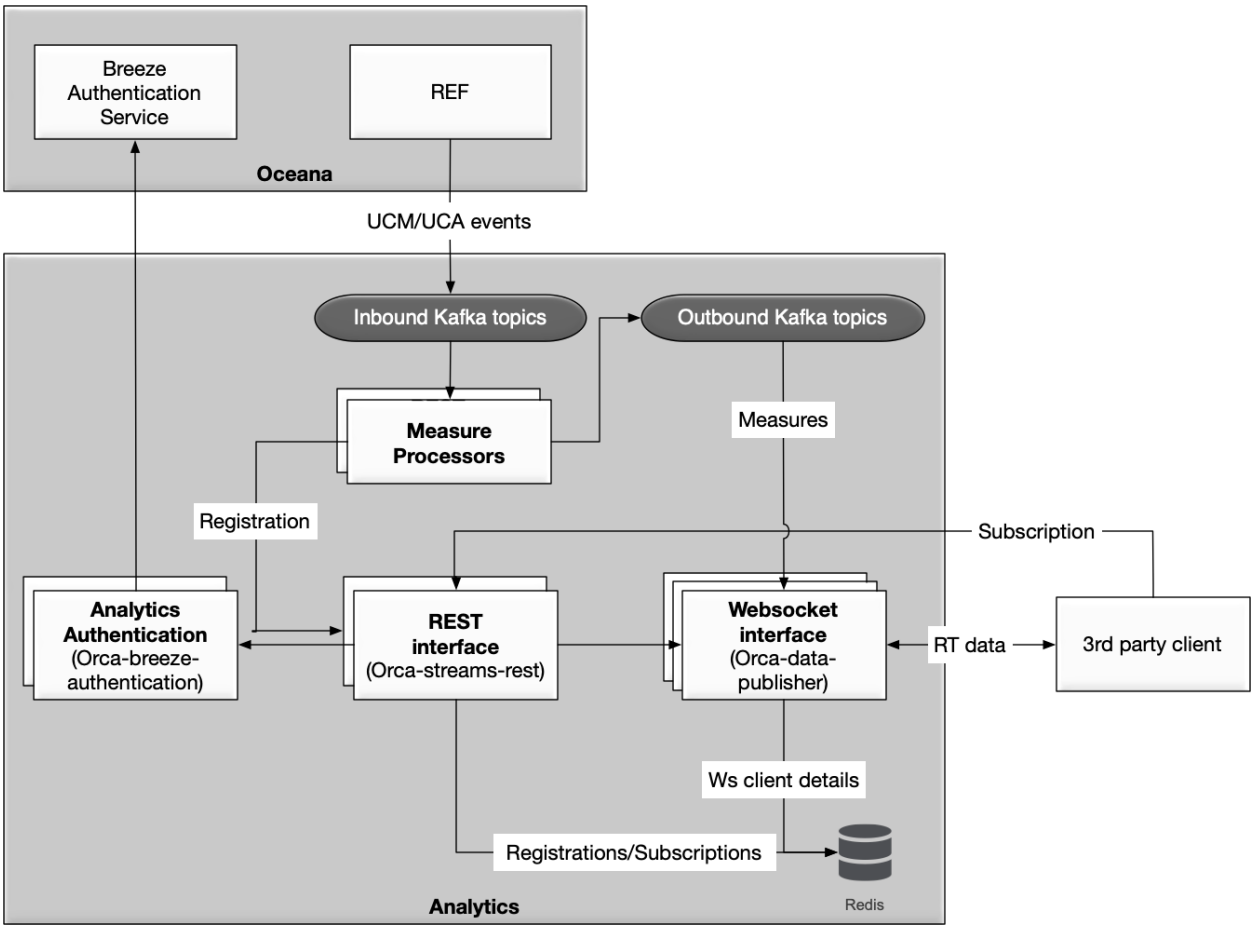


Figure 2 – Avaya Analytics™ Detailed Architecture

Detailed Description

Data exposed via the Open Interface

The following dimensions and intervals are supported on the real time interface

Dimension	Intervals
Agent	Start of Day
Agent By Account	Start of Day
Agent By Routing Service	Start of Day
Routing Service	Start of Day
Routing Point	Start of Day
Site	Start of Day
Agent By Not Ready Reason Code	Start of Day
Agent Group	Start of Day
Contact Details	Start of Day
Routing Service Group	Start of Day

For the full list of Measures available please refer to the *Avaya Analytics™ Data Dictionary 4.1.2.0*

All real-time measures for each of the intervals and dimensions are exposed on the open interface. Start of Day is 12.00 am server time.

Data is published on the real-time interface when the measure is updated.

ACM manages the creation of users that can subscribe for data, manages groups of agents, groups of routing services and assigns groups to supervisors.

Capacity considerations

The Rest & WebSocket Open Interface supports the load defined in the Avaya Oceana® solution Release 4.1.2.0 capacity requirements with the following limitations:

- Supports 10 groups of agents
- Supports 5 concurrent supervisors

Clients may subscribe simultaneously to all the measure streams configured in the system.

Requests sent to the REST interface are expected to be staggered by 100ms.

Each supervisor has its own WebSocket connection, and all the traffic for all the measure streams are sent over that connection. Each WebSocket message can be up to 64Kb in size.

REST APIs

The REST APIs exposed by the Orca Streams server are aimed at two types of applications:

1. **Producers**: These applications produce real-time measures and register themselves with the Analytics Streams Server as “producers”. They are also referred to as measure producers.
2. **Consumers**: These applications subscribe to the Analytics Streams Server to consumer the real-time date published by the Measure Producers. Workspaces is an example of Consumer application.

Producers and Consumers have different needs in terms of REST APIs and therefore use different endpoints. The primary focus of this document is to detail how to use the API from a Consumer point of view and will not cover the APIs used by Producers.

For a complete description of the REST endpoints, including the definitions of the data structures, please refer to the `openinterface-api.yaml` provided with the WebSocket client for Real-Time Open Interface on DevConnect. For more information on how to use the `openinterface-api.yaml` file, please consult https://swagger.io/

Connectivity

The REST and WebSocket interfaces are only accessible over SSL through the ingress gateway of the cluster.

To find the IP address of the ingress gateway, connect to the Cluster Control Manager (CCM) over SSH, switch to the root user and run this command:

```
kubectl get configmap common-services-kube-keepalived-vip -o yaml
```

The IP address of the ingress gateway is displayed on the third line of the output.

To get FQDN for the ingress gateway run this command:

```
nslookup <ingress-gw-ip>
```

All the REST interface APIs are accessible under the `orca-streams-rest` domain. As an example, here is a curl command for sending a login request to the REST endpoint on a lab where the ingress gateway is at IP 10.134.44.134.

```
curl -k --location --request GET 'https://10.134.44.134:443/orca-streams-
rest/users/login?tenant=0&username=cplabagentone@async.galwaylab.avaya
.com&password=abcd123'
```

For simplicity, all the endpoints listed in the rest of this document show no IP address, port or domain.

Subscription Management

The third-party application starts by sending supervisor's username and password to the REST's login endpoint, and once they are validated, receives a token which **must be passed with all subsequent HTTP requests.**

The application then sends a Subscription Request object over REST and receives a Subscription Response in return which contains the WebSocket URL used for sending real-time data.

- A unique subscription is required per dimension. For example, a user needs to send a subscription for Agent By Account, and another subscription for Routing Services.
- The user that was passed in as part of the subscription is validated against the list of supervisors configured in ACM and assigned an Avaya Analytics™ group.
- The agent data published on the WebSocket is based on the Avaya Analytics™ group assigned to the supervisor in ACM.

If an agent is removed from an Avaya Analytics™ Group in ACM, then that agent is removed from the stream of data feeding to all supervisors assigned to that group. A delete event is sent to the client.

If an agent is added to an Avaya Analytics™ Group, then that agent is added to the stream of data feeding to all supervisors assigned to that group. No added event is sent to the client.

If a group is removed from a supervisor, then all agents unique to that group are removed from the stream of data feeding to all supervisors assigned to that group. No delete event is sent to the client.

If a group is added to a supervisor, then all agents unique to that group are added to the stream of data feeding to all supervisors assigned to that group. No added event is sent to the client.

If a supervisor is deleted, all subscriptions and Kafka topics assigned to the user are deleted.

There are heartbeats on each WebSocket endpoint – see table "heartbeat message is sent every 8 seconds on the WebSocket endpoint that was received in the subscription response.

All communications with the REST and WebSocket interfaces are encrypted over SSL.

Data Filtering and Access Control

Users only see agents configured in ACM that they have access to. On subscription to the REST interface, their user credentials are sent, and Avaya Analytics™ checks if that user is administered in ACM and assigned to Avaya Analytics™ groups.

The subscription does not allow for any further filtering of data. It is not possible to subscribe for an individual Avaya Analytics™ group or specify specific agents of interest.

The subscription does not allow for the client to specify a subset of the measures available for a dimension – the client receives all measures for that dimension.

At present, the WebSocket interface provides a mechanism for filtering Routing Services which is enabled by setting this flag in the ConfigMap for orca-streams-data-publisher
`OCEANA.websocketSender.enableRoutingServiceGroupFilter=true`

Functional Model

Authorization token

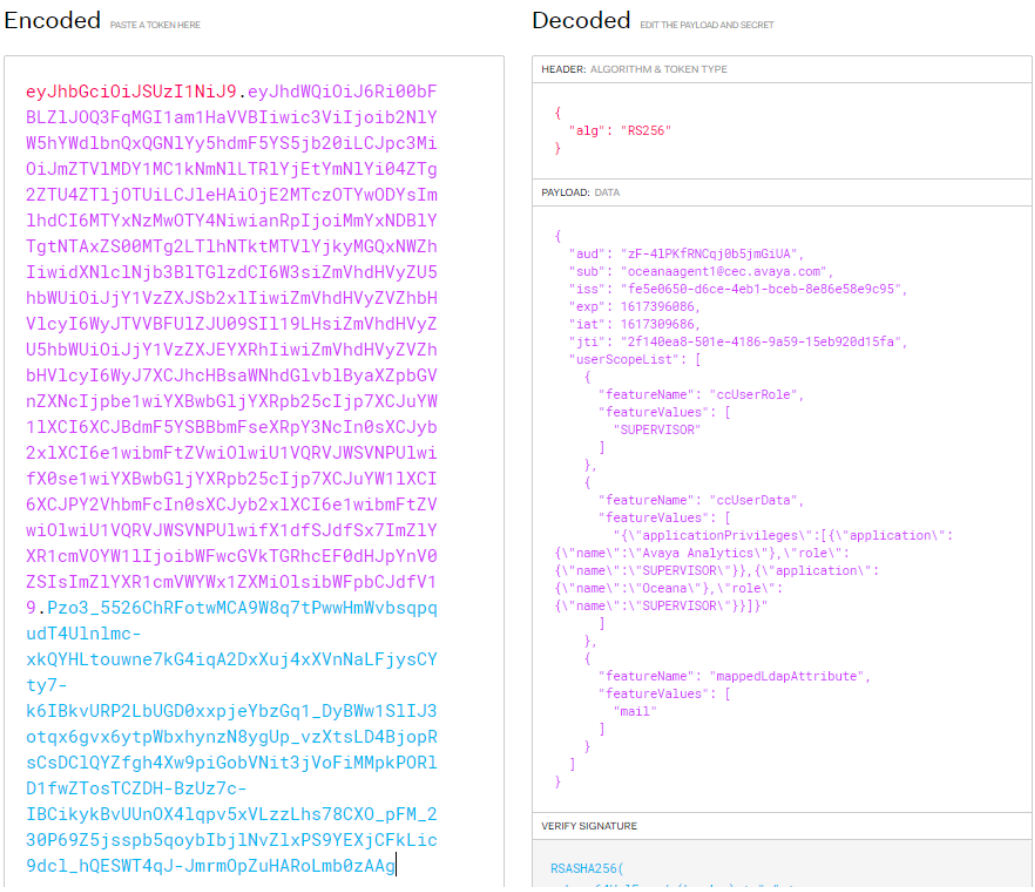
The third-party client starts by sending an HTTP GET request to the `/user/login` endpoint containing valid supervisor credentials for whom real-time data are being sought. The REST server checks the credentials received and, if successful, returns an Authorization token in the "authdata" field of the response.

The third-party application must pass this Authorization token to all subsequent REST API requests as part of the header, and to any WebSocket connection requests.

The token is a JSON Web Token (JWT) defined by open standard RFC 7519. The token is Base64Url encoded, but it is not encrypted. The third-party application is responsible for validating the token's signature to guarantee the token has not been tampered with. Examples of token decoding and signature validation are available for all common programming languages at this address: https://jwt.io/

Example of JWT token

The screenshot below shows the base64 encoded JWT token on the left, and the decoded equivalent on the right.



Subscribing to real-time data

Overview

Subscribing to a real-time data feed is a multi-stage process.

First, the third-party application retrieves the list of Sources and Producers configured in the system.

Second, the application sends a Subscription Request and in response, receives the URL of the WebSocket used for sending real-time data.

Third, the application sends a SubscriptionRedirect request over to the WebSocket to initiate the transfer of real-time data.

Sources

The third-party client sends an HTTP GET request to the `/sources` endpoint to retrieve a list of sources configured in the system. In Avaya Analytics ™ 4.1.2.0, there is currently only one source configured. The Source object, like all the resources returned by the REST interface, is in JSON format.

The most important field in the Source object is the "**sourceId"**, which the third-party application will need to query the list of Producers attached to this source.

Producers

The client then sends an HTTP GET request to the /`sources/{sourceId}/producer` endpoint to retrieve the list of measure producers attached to the Source.

At a high level, a Producer is composed of a header, dimensions, measures and locales.

Header

The header is composed of the following information:

Name	Description
sourceId	The unique id of the source this producer is attached to.
producerId	The unique id of the producer.
producerName	The name of the producer.
streamType	The only streamType currently supported is Start Of Day (SoD).
description	A description field provided by the Measure Producer.
version	The version of the provider.

Dimensions

Name	Description
name	Name of the dimension. For example: routingServiceName
type	The type associated with this dimension. For example: String
value	The value associated with the dimension. s
displayName	The display name for the dimension
description	The description for the dimension

Measures

Name	Description
name	The name of the measure. For example: “abandoned”
type	The type of the measure. For example: String, Number, Duration
format	For example: empty field, String, Number, Seconds
values	For example: Voice, SMS, Email
displayName	The default display name. For example: “Abandoned”
description	A description for the measure.

Locales

This is an array of strings where each entry contains the country code of a supported locale. Avaya Analytics™ support the following locales:

Code	Locale
de	German
en-us	English - United States
es	Spanish
fr	French
it	Italian
ja	Japanese
ko	Korean
pt_BR	Portuguese - Brazil

ru	Russian
zh-cn	Chinese - China
zh-tw	Chinese - Taiwan

Subscription request

The third-party application sends an HTTP POST request to `/source/{sourceId}/producer/{producerId/subscriptions` to subscribe to a real-time data feed. The response is a SubscriptionResponse containing the URL of the WebSocket used to publish the real-time data.

The structure of the SubscriptionRequest is as follows:

Name	Description
sourceId	The id of the source we want to subscribe to.
producerId	The id of the producer we want to subscribe to.
streamType	The stream type. Currently, “SoD” is the only supported value. SoD stands for Start of Day.
transport	Currently, “websocket” is the only supported value.
tenantId	The tenantId field is not currently used. Set this field to “0”.
username	The username of the supervisor.
dimensionFilters	An array of dimension filters to apply before sending the real-time data over the WebSocket interface. (not currently used)
measureFilters	An array of measure filters to apply before sending the real-time data over the WebSocket interface. (not currently used)

Filters

The dimensionFilters and measureFilters share the same data structure, which is defined as follows:

Name	Description
name	Name of the dimension or measure this filter is applicable to.
Filters	An array of Strings containing the values to be filtered.

If the subscription is successful, the REST interface sends back a SubscriptionResponse object which is defined as follows:

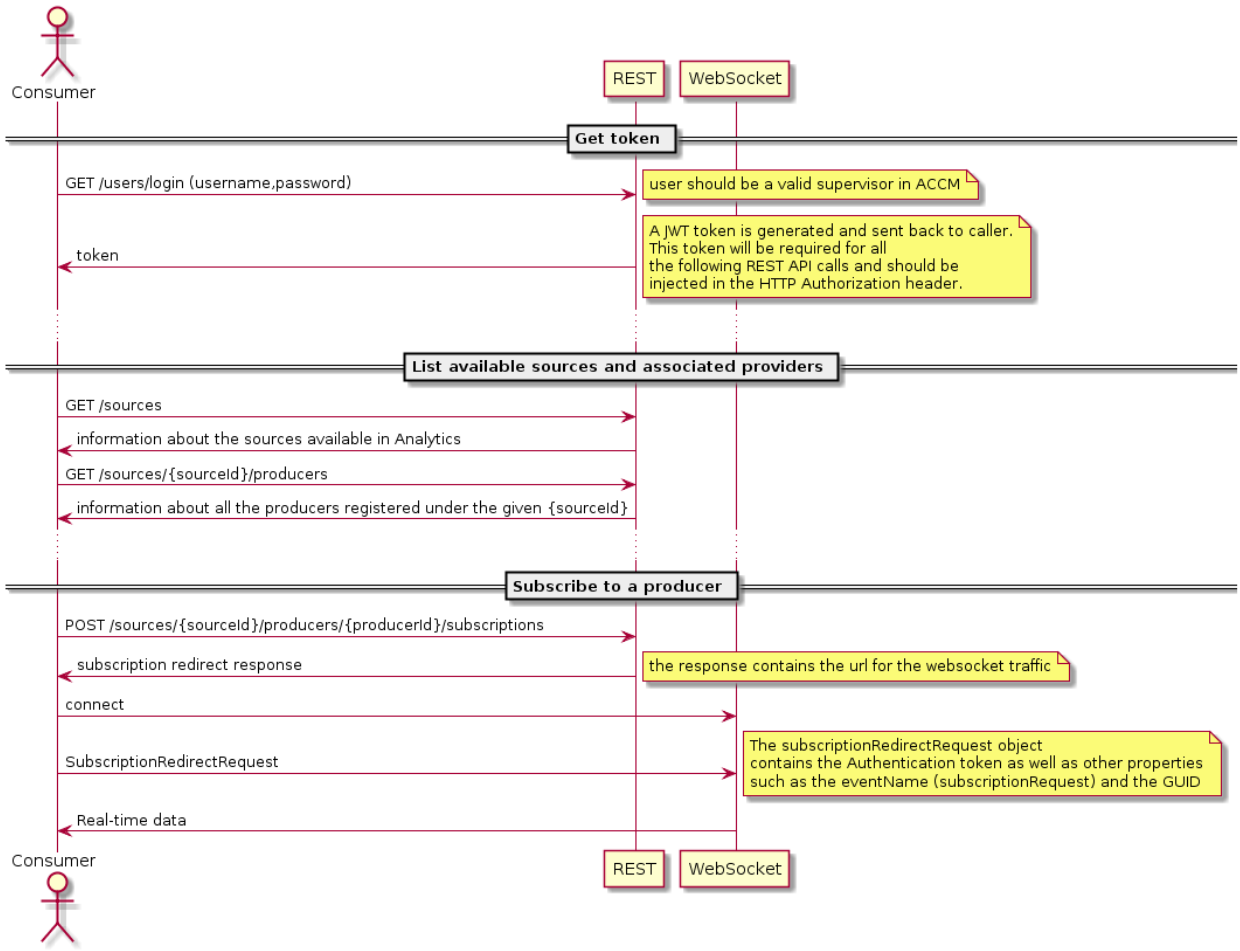
Name	Description
source	The name of the source subscribed to.
sourceId	The id of the source subscribed to.
producer	The name of the producer subscribed to.
producerId	The id of the producer subscribed to.
streamType	The type of streams subscribed to. Currently, only Start of Day (SoD) is supported.
version	The version of the producer subscribed to
transport	Currently, only “WebSocket” is supported.
endpoint	The WebSocket URL used to publish real-time data
guid	A unique ID generated by the WebSocket interface.

WebSocket connection

The third-party application connects to the WebSocket URL specified in the SubscriptionResponse and sends a SubscriptionRedirectRequest message defined as follows:

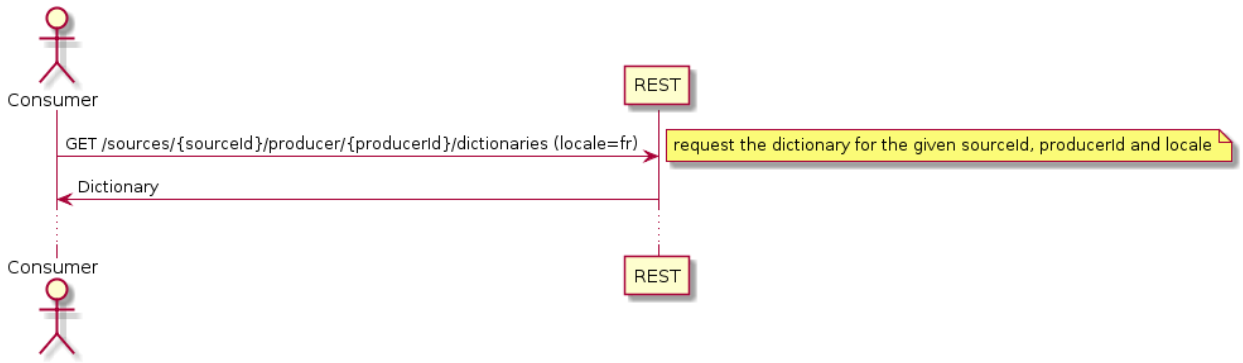
Name	Description
authorization	JWT token
eventName	This parameter is a string and its value can be: - subscriptionRedirect - unsubscriptionRedirect
source	Copy the source value from the SubscriptionResponse
sourceId	Copy the sourceId value from the SubscriptionResponse
producer	Copy the producer value from the SubscriptionResponse
producerId	Copy the producerId value from the SubscriptionResponse
streamType	Copy the streamType value from the SubscriptionResponse
version	Copy the version value from the SubscriptionResponse
transport	Copy the transport value from the SubscriptionResponse
endpoint	Copy the endpoint value from the SubcriptionResponse.
guid	Copy the GUID value from the SubscriptionResponse.
currentGuids	For internal use only. Do not fill in.

Subscription overall sequence diagram



Retrieving the Dictionary

Each Producer is associated with a dictionary that provides the necessary translations to build a fully internationalized user interface. To retrieve a dictionary for a particular locale, the third-party application sends an HTTP GET `/sources/{sourceId}/producer/{producerId}/dictionaries` request and sets the “locale” query parameter to the desired value.



Retrieving Dimension Data

AdminData is a special Measure Producer in charge of exposing Administrative information also called Dimension Data.

List of Dimension Data available:

1. Agents
2. Accounts
3. Groups
4. Group Members
5. Group Privileges
6. Reason Codes
7. Routing Points
8. Routing Services
9. Channel

To receive dimension data, third-party applications send an HTTP GET request to `/sources/{sourceId}/producers/Admin_Admin_3.5/dimdata/{dimDataName}/datatype/{dimDataType}`

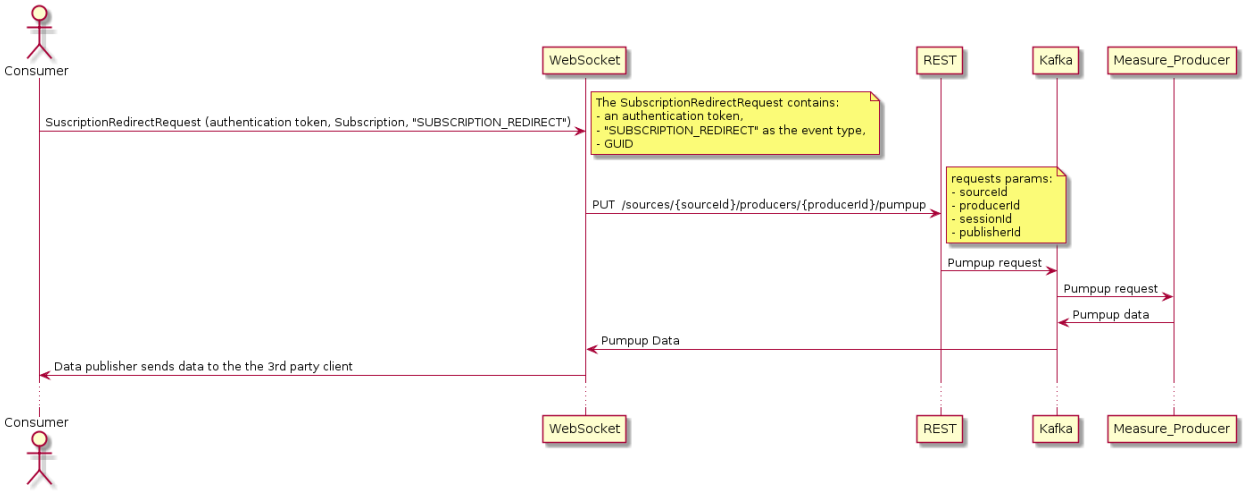
Please note that in this release the values for dimDataName and dimDataType need to be identical. Possible values include:

1. Agent
2. Account
3. Group
4. GroupMember
5. GroupPrivilege
6. ReasonCode
7. RoutingPoint
8. RoutingService
9. Channel

Pumpup request

Pumpup requests are sent by the third-party application to the WebSocket interface which then issues a specialised request on the REST interface.

Third-party clients should not send a Pumpup request directly to the rest interface.



Real Time Data Processing

The real-time data sent by the Measure Producers over the WebSocket interface are in JSON format and will continue to be sent until the third-party client either unsubscribe, or the client WebSocket connection is closed.

Unsubscribing

Unsubscribing from the Open Interface is a 3-stage process.

The first stage consists in sending a SubscriptionRedirectRequest to the WebSocket interface. The Unsubscription object is similar to the Subscription object used to initiate the real-time data feed and is described below.

Name	Description
authorization	JWT token
eventName	This parameter is a string and its value must be: “unsubscriptionRedirect”
source	Copy the source value from the SubscriptionResponse
sourceId	Copy the sourceId value from the SubscriptionResponse
producer	Copy the producer value from the SubscriptionResponse
producerId	Copy the producerId value from the SubscriptionResponse
streamType	Copy the streamType value from the SubscriptionResponse
version	Copy the version value from the SubscriptionResponse
transport	Copy the transport value from the SubscriptionResponse
endpoint	Copy the endpoint value from the SubcriptionResponse.
guid	Copy the GUID value received in the SubscriptionResponse.
currentGuids	For internal use only. Do not fill in.

The second stage consists in sending an HTTP DELETE request to the `/source/{sourceId}/producer/{producerId/subscriptions` REST endpoint. No additional information is necessary to complete this stage.

Lastly, the third-party application can safely disconnect from the WebSocket.

Heartbeat and pumpup messages

When a subscription request has been successful, a heartbeat message is sent every 8 seconds on the WebSocket interface.

The following table defines the details for **heartbeat** data message:

Measures Stream	Message Format (JSON)
All streams	{"dimension":{},"realtimeData":{},"pumpup":false,"pumpupComplete":false,"heartbeat":true}

If a pumpup of data is requested, the current measure data is sent on the WebSocket. When all relevant data has been sent, a “pumpup complete” message is sent. See below for details of the data in a pumpup.

The following table defines the details for **pumpup complete** data message:

Measures Stream	Message Format (JSON)
All streams	{"dimension":{},"realtimeData":{},"pumpup":true,"pumpupComplete":true,"heartbeat":false}

Third-party clients must ensure they sent a “--heartbeat--” message to the WebSocket interface every 8 seconds to keep the connection alive.

The server will terminate the WebSocket connection if it fails to receive a heartbeat from the client.

If required, the timeout for the heartbeat can be set by editing the value of `OCEANA.websocketSender.heartbeatIntervalSeconds` in the ConfigMap for `orca-streams-data-publisher` using this command:
`k edit cm orca-streams-data-publisher`

Beware that updating the timeout value will affect other clients such as Workspaces.

Recovering from the loss of connectivity

The client should try to reconnect to the server in the event of the WebSocket connection going down. The process for reconnecting involves resubscribing to the REST interface and reconnecting to the WebSocket endpoint.

In the case of a HA node or pod failover, the third-party client will detect the connection is down and will repeatedly retry the connection until it is restored. In case of one `orca-streams-data-publisher` pod going down, the connection will be restored to the remaining functioning `orca-streams-data-publisher` pod. Kubernetes will take care of starting a new instance of the `orca-streams-data-publisher` pod to maintain the desired replica count defined in the deployment. The same principle applies to the `orca-streams-rest` pod.

Error codes

The REST interface uses the error codes defined inside the `openinterface-api.yaml` file provided with the sample client.

The WebSocket interface uses the following errors codes:

- 200 OK
- 500 Internal Server Error. The error text contains an explanation for the error. Typically, the corresponding stack trace is available in the log file of the `orca-streams-data-publisher`.

Open Interface Measures Streams and Data

For the full list of Measures available please refer to the Avaya Analytics™ *Data Dictionary 4.1.2.0*

The following table defines the details for measures data messages:

List of producers:

1. Agent
2. AgentByAccount
3. AgentGroup
4. Agent By Not Ready Reason Code
5. ContactDetail
6. RoutingService
7. RoutingServiceByAgent
8. Site
9. VDN
10. RoutingServiceGroup

Producer name	Message Format	Example
Agent	{"dimension":{"agentId":"agentId"},"realtimeData":{"measure":value...},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false} dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":"{\"agentId\":\"traffic181\"}","realtimeData":"{\"offered\":1358,\"notAnswered\":1358}","pumpupIdentifier":null,"pumpup":false,"pumpupComplete":false,"heartbeat":false,"extra":null,"sourceId":"Oceana_Streams_127.0.0.1_3.5","producerId":"Agent_SoD_3.5","eventAction":"UPSERT"} Note: This example was taken from a traffic lab where the agent was not answering the contacts presented to him. This is clearly visible here as the number of “offered” contacts is equal to the number of “not_answered”. The “pumpupIdentifier” field is null because “pumpup” is false. The “extra” field is a placeholder for metric timestamps. This is an Avaya

Producer name	Message Format	Example
		internal feature which is not supported for customer use.
Agent By Account	{"dimension":{"agentId":"agentId","accountId":"accountId", "channelId":"channelId"}, "realtimeData":{"measure":value...},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":{"accountId":"8881001","agentId":"888101","channelId":"Voice"},"realtimeData":{"activeWorkCount":"0","lastStateReasonTimestamp":"00000001471351598494"},"pumpup":false,"pumpupComplete":false, heartbeat": false }
Agent Group	{"dimension":{"groupid":"groupid"},"realtimeData":{"measure":value…},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":"{\"groupId\":\"10003\"}","realtimeData":"{\"acwDuration\":7,\"shortAcw\":4}","pumpupIdentifier":null,"pumpup":false,"pumpupComplete":false,"heartbeat":false,"extra":null,"sourceId":"Oceana_Streams_127.0.0.1_3.5","producerId":"AgentGroup_SoD_3.5","eventAction":"UPSERT"}
Agent By Not Ready Reason Code	{"dimension":{"agentId":"agentId","nrReasonCode":"nrReasonCode"},"realtimeData":{"measure":value…},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":{"agentId":"nbolshak","nrReasonCode":"101"},"realtimeData":{"nrReasonCodeOccurrence":1},"pumpup":false,"pumpupComplete":false,"heartbeat":false}
Contact Details	{"dimension":{"segmentid":"segmentid"},"realtimeData":{"measure":value…},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String>	{"dimension":"{\"segmentId\":\"dab814ea-316d-439e-9364-8652b2cb3aa0\"}","realtimeData":"{\"initialDisposition\"

Producer name	Message Format	Example
	realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	:\"UNKNOWN\",...,\"workType\":\"DEFAULT\"}","pumpupIdentifier":null,"pumpup":false,"pumpupComplete":false,"heartbeat":false,"extra":null,"sourceId":"Oceana_Streams_127.0.0.1_3.5","producerId":"ContactDetail_CDR_3.5","eventAction":"UPSERT"}
Routing Service	{"dimension":{"routingServiceName":"routingServiceName"},"realtimeData":{"measure":value...},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":{"routingServiceName":"ChatRoutingService"},"realtimeData":{"contactsWaiting":0,"active":0,"heldContacts":0,"contactsAtAgent":1,"alerting":1},"pumpup":true,"pumpupComplete": true, heartbeat": false }
Routing Service By Agent	{"dimension":{"agentId":"agentId","routingServiceName":"routingServiceName"},"realtimeData":{"measure":value...},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":{"agentId":"8881001","routingServiceName":"ChatRoutingService"},"realtimeData":{"offered":1,"alertDuration":109},"pumpup":false,"pumpupComplete":false, heartbeat": false }
Site	{"dimension":{"siteName":"siteName","siteId":"siteId"},"realtimeData":{"measure":value...},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":"{\"siteName\":\"traffic2\",\"siteId\":\"4981\"}","realtimeData":"{\"replied\":101206}","pumpupIdentifier":null,"pumpup":false,"pumpupComplete":false,"heartbeat":false,"extra":null,"sourceId":"Oceana_Streams_127.0.0.1_3.5","producerId":"Site_SoD_3.5","eventAction":"UPSERT"}

Producer name	Message Format	Example
VDN	{"dimension":{"routingPointId":"routingPointId "},"realtimeData":{"measure":value...},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":"{\"routingPointId\":\"5003\"}","realtimeData":"{\"routePointDisconnects\":1,\"routingDuration\":1,\"routePointHandled\":1}","pumpupIdentifier":"cplabagentone@async.galwaylab.avaya.com_2_ROUTINGPOINTMEASURES_1613054564915","pumpup":true,"pumpupComplete":false,"heartbeat":false,"extra":null,"sourceId":"Oceana_Streams_127.0.0.1_3.5","producerId":"VDN_SoD_3.5","eventAction":"UPSERT"}
Routing Service Group	{"dimension":{"groupid":"groupid"},"realtimeData":{"measure":value…},"pumpup":true | false,"pumpupComplete":true | false, heartbeat":true | false } dimension : Map<String, String> realtimeData : Map<String, Object> pumpup : Boolean pumpupComplete : Boolean heartbeat : Boolean	{"dimension":"{\"groupId\":\"10037\"}","realtimeData":"{\"shortAcw\":3}","pumpupIdentifier":null,"pumpup":false,"pumpupComplete":false,"heartbeat":false,"extra":null,"sourceId":"Oceana_Streams_127.0.0.1_3.5","producerId":"RoutingServiceGroup_SoD_3.5","eventAction":"UPSERT"}

Sample Measure Stream Message Data

For the full list of Measures available please refer to the *Avaya Analytics™ Data Dictionary 4.1.2.0*

Agent goes Ready/Not Ready

The following example contains the AGENTMEASURES Measure Stream messages/events produced when an agent goes READY/NOT READY. Includes

- AGENTMEASURES Messages for pumpup of data
- Followed by Agent 'scollins' going READY/NOT READY

PUMPUP

1. {"dimension":{"agentId":"scollins"},"realtimeData":{"consultsAccepted":0,"transferred":0,"abandonedFromAlerting":0,"adHocDuration":0,"disconnectsFromHold":0,"bargedIn":0,"abandonTimeDuration":0,"observed":0,"transferredAcceptedFromService":0,"blendedActiveDuration":0,"agentLogonDuration":0,"acw":0,"additionalWorkDuration":0,"blendedAlertDuration":0,"observedDuration":0,"conferencedInitiated":0,"blendedAlert":0,"abandonedFromQueue":0,"coaching":0,"adHoc":0,"abandoned":0,"shortEngagements":0,"consultedDuration":0,"totalDuration":0,"ringTimeDuration":0,"transferredInitiated":0,"conferencedAccepted":0,"longHolds":0,"transferredInitiatedToAgent":0,"completed":0,"additionalWork":0,"answeredAfterThreshold":0,"consults":0,"blendedActive":0,"longAcw":0,"idleTimeDuration":62,"abandonedAfterThreshold":0,"acwDuration":0,"bargedOutDuration":0,"alertDuration":0,"totalActiveTimeDuration":0,"contacthandlingDuration":0,"transferredInitiatedToService":0,"observingDuration":0,"totalHoldTimeDuration":0,"conferenced":0,"coached":0,"acwExtended":0,"longEngagements":0,"consultsInitiated":0,"transferredToService":0,"agentNotReady":4,"handlingDuration":0,"activeTimeDuration":0,"transferredAcceptedFromAgent":0,"coachingDuration":0,"offered":0,"bargedInDuration":0,"shortNotReady":0,"transferredToAgent":0,"holdDuration":0,"agentReady":3,"consultingDuration":0,"consultDuration":0,"notAnswered":0,"answered":0,"agentNotReadyTimeDuration":4025,"transferredAccepted":0,"shortAcw":0,"bargedOut":0,"coachedDuration":0,"totalWaitTime":0,"holds":0,"observing":0},"pumpup":true,"pumpupComplete":false,"heartbeat":false }

2. {"dimension":{"agentId":"scollins"},"realtimeData":{"active":0},"pumpup":true,"pumpupComplete":false,"heartbeat":false }

3. {"dimension":{"agentId":"scollins"},"realtimeData":{"agentLogoutTimeStamp":"UNKNOWN","agentFirstName":"Siobhan","supervisorFirstName":"Morris","agentLastName":"Collins","lastStateChangeTimestamp":"00000001496919128431","supervisorId":"tmorris","supervisorLastName":"Tommy","nrReasonCode":"0","agentId":"scollins","lastStateReasonTimestamp":"00000001496919128431","loginTimeStamp":"UNKNOWN","accountAddress":"UNKNOWN","workLimit":"1","agentDisplayName":"Siobhan Collins","agentState":"NOT_READY","workState":"UNAVAILABLE","lastWorkCodeChangeTimestamp":"00000001496919128117","nrReasonCodeName":"DEFAULT","lastStateReasonTimestamp":"00000001496919128431","activeWorkCount":"0"},"pumpup":true,"pumpupComplete":false,"heartbeat":false }

4. {"dimension":{},"realtimeData":{},"pumpup":true,"pumpupComplete":true,"heartbeat":false}

AGENT STATE CHANGE FROM READY TO NOT READY

1. {"dimension":{"agentId":"scollins"},"realtimeData":{"agentNotReadyTimeDuration":4352,"agentReady":4},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

NOTES:

- **agentId:** This is a generic unique agent ID that is *not* media specific. Underneath this ID lies multiple "account" ID's, one for each media type. So there can be a voice account ID, chat account ID, email account ID and SMS account ID. Note that specifically in the case of voice, the voice account ID will always be the same as a CC-Elite numerical agent ID.
- **agentNotReadyTimeDuration:** The amount of time in seconds the agent was in a not ready state during the reporting period.
- **agentReady:** Indicates the number of times the agent is in a ready state during the reporting period.
- **pumpup:** Indicates if this is a pumpup message or not. In this example, it is false so no pump up message.
- **pumpupComplete:** Indicates if this is a pumpup is complete message. In this example, it is false so no pump up in this event.

2. {"dimension":{"agentId":"scollins"},"realtimeData":{"lastStateChangeTimestamp":"0000000149691945647 8","nrReasonCodeName":"NOT_AVAILABLE","agentState":"READY","workState":"IDLE","lastWorkCodeChangeTimestamp":"00000001496919456497","lastStateReasonTimestamp":"000000001496919456495","nrReasonCode":"NOT_AVAILABLE"},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

NOTES:

- **lastStateChangeTimestamp:** This is the UTC timestamp of when this state change happened which caused this event to be sent.
- **nrReasonCodeName:** This is a string value that represents the Not Ready Reason Code. The string values for this can be determined by the customer/user – depending on business needs (e.g. Lunch, Busy, Break, etc).
- **agentState:** Self explanatory - the agent's state
- **workState:** State of the agent relevant to their work; Available, Unavailable, Busy, Idle
- **lastWorkCodeChangeTimestamp:** This is UTC timestamp of the last change to the work code.
- **lastStateReasonTimestamp:** This is UTC timestamp of when the last reason code was entered. For example if the agent goes NOT READY with reason code X, they could subsequently change it to reason code Y. This revised reason code would not constitute a state change, but would cause a new event to be fired, and this field will contain the UTC timestamp of when that revised reason code was entered.
- **pumpup:** Indicates if this is a pumpup message or not. In this example, it is false so no pump up message.
- **pumpupComplete:** Indicates if this is a pumpup is complete message. In this example, it is false so no pump up in this event.

3. {"dimension":{"agentId":"scollins"},"realtimeData":{"idleTimeDuration":70},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

NOTES:

- **idleTimeDuration:** The amount of time the agent was waiting to be offered an engagement within the reporting period (Example e.g., the amount of time in seconds that the agent was idle with no active engagement).
- **pumpup:** Indicates if this is a pumpup message or not. In this example, it is false so no pump up message.
- **pumpupComplete:** Indicates if this is a pumpup is complete message. In this example, it is false so no pump up in this event.

4. {"dimension":{"agentId":"scollins"},"realtimeData":{"lastStateChangeTimestamp":"0000000149691946504 5","nrReasonCodeName":"DEFAULT","agentState":"PENDING_NOT_READY","workState":"UNAVAILABLE ","lastWorkCodeChangeTimestamp":"00000001496919464696","lastStateReasonTimestamp":"00000001 496919465049","nrReasonCode":"0"},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

NOTES:

- **lastStateChangeTimestamp:** This is UTC timestamp of when this state change happened which caused this event to be sent.
- **nrReasonCodeName:** This is a string value that represents the Not Ready Reason Code. The string values for this can be determined by the customer/user – depending on business needs (e.g. Lunch, Busy, Break, etc).
- **agentState:** Self explanatory - the agent's state.
- **workState:** State of the agent relevant to their work; Available, Unavailable, Busy, Idle.
- **lastWorkCodeChangeTimestamp:** This is UTC timestamp of the last change to the work code.
- **lastStateReasonTimestamp:** This is UTC timestamp of when the last reason code was entered. For example if the agent goes NOT READY with reason code X, they could subsequently change it to reason code Y. This revised reason code would not constitute a state change, but would cause a new event to be fired, and this field will contain the UTC timestamp of when that revised reason code was entered.
- **pumpup:** Indicates if this is a pumpup message or not. In this example, it is false so no pump up message.
- **pumpupComplete:** Indicates if this is a pumpup is complete message. In this example, it is false so no pump up in this event.

5. {"dimension":{"agentId":"scollins"},"realtimeData":{"agentNotReady":5},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

NOTES:

- **agentNotReady:** The amount of time that the agent was in a not ready state during the reporting period.
- **pumpup:** Indicates if this is a pumpup message or not. In this example, it is false so no pump up message.
- **pumpupComplete:** Indicates if this is a pumpup is complete message. In this example, it is false so no pump up in this event.

6. {"dimension":{"agentId":"scollins"},"realtimeData":{"lastStateChangeTimestamp":"000000014969194651
93

NOTES:

- **lastWorkCodeChangeTimestamp:** This is UTC timestamp of the last change to the work code.

Agent goes Ready / Not Ready Measures

The following table contains the AGENTBYACCOUNTMEASURES Measure Stream messages produced when an agent goes READY/NOT READY

{"dimension":{"accountId":"8501014","agentId":"jsmith", "channelId":"Voice"},
"realtimeData":{"accountReady":1},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"8501014","agentId":"jsmith", "channelId":"Voice"},
"realtimeData":{"accountState":"READY","loginTimeStamp":"00000001496242479928","lastStateChangeT
imestamp":"00000001496242479928","lastStateReasonTimestamp":"00000001496242479928"},"pumpu
p":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPChatRoutableAddress","agentId":"jsmith", "channelId":"Chat"},
"realtimeData":{"accountReady":1},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPChatRoutableAddress","agentId":"jsmith", "channelId":"Chat"},
"realtimeData":{"accountState":"READY","loginTimeStamp":"00000001496242479726","lastStateChangeT
imestamp":"00000001496242479726","lastStateReasonTimestamp":"00000001496242479882"},"pumpu
p":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPShortMessageServiceRoutableAddress","agentId":"jsmith",
"channelId":"ShortMessageService"},
"realtimeData":{"accountReady":1},"pumpup":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPShortMessageServiceRoutableAddress","agentId":"jsmith",
"channelId":"ShortMessageService"},
"realtimeData":{"accountState":"READY","loginTimeStamp":"00000001496242479857","lastStateChangeT
imestamp":"00000001496242479857","lastStateReasonTimestamp":"00000001496242479882"},"pumpu
p":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPChatRoutableAddress,"agentId":"jsmith", "channelId":"Chat"},
"realtimeData":{"loginTimeStamp":"00000001496242479928","lastStateChangeTimestamp":"000000014
96242479928","lastStateReasonTimestamp":00000001496242479928},"pumpup":false,"pumpupComplet
e":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPShortMessageServiceRoutableAddress,"agentId":"jsmith",
"channelId":"ShortMessageService"},
"realtimeData":{"loginTimeStamp":"00000001496242479928","lastStateChangeTimestamp":"000000014
96242479928","lastStateReasonTimestamp":"00000001496242479928"},Pumpup:false,"pumpupComplet
e":false,"heartbeat":false }

{"dimension":{"accountId":"8501014","agentId":"jsmith", "channelId":"Voice"},
"realtimeData":{"accountLogonDuration:6,"accountNotReady":1},"pumpup":false,"pumpupComplete":fal
se,"heartbeat":false }

{"dimension":{"accountId":"8501014","agentId":"jsmith", "channelId":"Voice"},
"realtimeData":{"accountState":"NOT_READY","lastStateChangeTimestamp":"00000001496242486588","l
astStateReasonTimestamp:00000001496242486588},"pumpup":false,"pumpupComplete":false,"heartbea
t":false }

{"dimension":{"accountId":"jsmith_OCPChatRoutableAddress","agentId":"jsmith", "channelId":"Chat"},
"realtimeData":{"accountLogonDuration":6,"accountNotReady":1},"pumpup":false,"pumpupComplete":fa
lse,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPChatRoutableAddress","agentId":"jsmith", "channelId":"Chat"},
"realtimeData":{"accountState":"NOT_READY","lastStateChangeTimestamp":"00000001496242486368","l
astStateReasonTimestamp":"00000001496242486380"},"pumpup":false,"pumpupComplete":false,"heart
beat":false }

{"dimension":{"accountId":"jsmith_OCPShortMessageServiceRoutableAddress","agentId":"jsmith",
"channelId":"ShortMessageService"},"realtimeData":{"lastStateChangeTimestamp":"00000001496242486
096","lastStateReasonTimestamp":"00000001496242486285"},"pumpup":false,"pumpupComplete":false,
"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPChatRoutableAddress","agentId":"jsmith",
"channelId":"ShortMessageService"},"realtimeData":{"lastStateChangeTimestamp":"00000001496242486
588","lastStateReasonTimestamp":"00000001496242486588"},"pumpup":false,"pumpupComplete":false,
"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPShortMessageServiceRoutableAddress","agentId":"jsmith",
"channelId":"ShortMessageService"},"realtimeData":{"accountLogonDuration":6,"accountNotReady":1},"
pumpup":false,"pumpupComplete":false,"heartbeat":false }

{"dimension":{"accountId":"jsmith_OCPShortMessageServiceRoutableAddress","agentId":"jsmith",
"channelId":"ShortMessageService"},"realtimeData":{"accountState":"NOT_READY","lastStateChangeTim
estamp":"00000001496242486588","lastStateReasonTimestamp":"00000001496242486588},"pumpup":f
alse,"pumpupComplete":false,"heartbeat":false }

Third-party client coding considerations

Eventing considerations

The events dispatched by Avaya Analytics™ are based on events received from the Avaya Breeze® Reliable Eventing Framework.

The distributed nature of the Avaya Oceana® solution components means that multiple events can be sent when a user transitions from one state to another. Consequently, third-party clients consuming events sent by the Avaya Analytics™ Open Interface might require some logic in order to follow these state transitions.

For example, when an agent logs in, their state changes from LOGGED OUT to PENDING_LOGIN and then finally LOGGED IN. The event for PENDING_LOGIN may or may not contain other information such as the “nrReasonCode”. If the “nrReasonCode” is not present in the PENDING_LOGIN event, it will be part of the LOGIN event. It is up to the third-party client to build an accumulative view of the state of the agent.

The events sent over the WebSocket interface are “delta updates” which means that only updated values are sent. This is to limit the associated network bandwidth and CPU activity. As a result, if a third-party client is consuming AGENTMEASURES it will only receive a JSON message if an agent state triggered the update of a measure.

A heartbeat JSON message is sent every 8 seconds.

Troubleshooting

System health checks

To check if your Avaya Analytics™ solution is healthy, connect to CCM over SSH and run this command:

```
kubectl get pods --all-namespaces
```

All the pods should have a status set to Running.

Configuration check

Workspaces uses the REST & WebSocket interface to consume real-time data. Therefore, if real-time data is showing in the Workspaces dashboards, then your system is fully configured, and third-party applications should be able to receive real-time data as well.

If no real-time data is shown in Workspaces please refer to the Documentation section for the installation and troubleshooting guides.

Logging

The log files for the REST and WebSocket interfaces can be obtained by connecting to CCM over SSH and calling the `kubectl logs` command on the `orca-streams-rest` and `orca-streams-data-publisher` pods.

On HA systems, there are multiple instances of the `orca-streams-rest` and `orca-streams-data-publisher` pods. There is a log file for each pod instance.

The default log levels for these applications is suitable for debugging connectivity issues and we are not expecting users to change it. However, it is possible to update the log level by editing the ConfigMap of the pods if desired. Please be aware that increasing the log levels will results in higher I/O and may affect performance.

Debugging tools

Below are a few suggestions that will help you with debugging your application.

1. We recommend deploying the REST & WebSocket Sample Client application on the CCM to validate that your system is working as expected. Java is already available on CCM, so all you need to do is configure the `avaya.oceanalytics.stream-server.hostname` field in

the `application.properties` with the FQDN or IP address of your ingress gateway.

2. Use curl or Postman (https://www.postman.com/) to exercise the REST endpoints. In the examples below, replace `<ingress-gw-ip>`, `<username>`, `<password>` and `<token>` with your own data.

   Login

   ```
   curl -k --location --request GET \
   'https://<ingress-gw-ip>:443/orca-streams-
   rest//users/login?tenant=0&username=<username>&password=<password>'

   Example of username: oceanaagent1@cec.avaya.com
   ```

   Get sources

   ```
   curl -k --location --request GET \
   'https://<ingress-gw-ip>:443/orca-streams-rest/sources?locale=en&tenant=0' \
   --header 'Accept: application/json' \
   --header 'Authorization: Bearer <token>'
   ```

   Get producers

   ```
   curl -k --location --request GET \
   'https://<ingress-gw-ip>:443/orca-streams-
   rest/sources/Oceana_Streams_127.0.0.1_3.5/producers?tenant=0&locale=en' \
   --header 'Accept: application/json' \
   --header 'Authorization: Bearer <token>'
   ```

3. You can take inspiration from the REST requests issued by Workspaces by turning on Developer Tools in your browser.

Documentation

To access the relevant documentation, go to https://support.avaya.com

Applicable Documentation for Avaya Analytics™

Deploying Avaya Analytics™ for the Avaya Oceana® Solution
Maintaining and Troubleshooting Avaya Analytics™ for Avaya Oceana® Solution
Avaya Analytics™ Data Dictionary

Applicable Documentation for the Avaya Oceana® Solution

Avaya Oceana® Solution Description
Administering Avaya Oceana® Solution
Using Avaya Workspaces for Avaya Oceana® SolutionDeploying Avaya Oceana® Solution
Troubleshooting Avaya Oceana® Solution

Frequently Asked Questions

Functionality Questions

When registering a client, what information do we need?

- To subscribe to a measure producer, you need to know the IP Address and Port number of the Ingress Gateway as well as the Source and Producer names.

How do we get agent specific events? Are they sent individually, or as a list of multiple agent events?

- Each agent event is sent individually.

Are we filtering out specific events or reason codes or we will be taking in all the events?

- There is no filtering of events. For every state change of an agent, the event is sent to the client. The client will have to filter out events that they are not interested in.

Will the Timezone used for event time stamps be constant?

- All events will have the UTC timestamp.

How to determine if an agent is logged in or logged out?

- The agent/account state will show Logout if the agent is LOGGED_OUT, otherwise it will show READY or NOT_READY.

What happens if the client loses connection with the WebSocket interface?

- The client must monitor the network connection. If the connection goes down an `onClose` event is sent to the client and the client should then try to reconnect and resubscribe for all producers the client is interested in.
  Also the client must keep an eye on heartbeats that it receives. Heartbeats take the form of a real-time message and also a server client heartbeat “--heartbeat--”.
  On receiving the “--heartbeat--” message from the publisher the client should reply back with the same “--heartbeat--” message. This “--heartbeat--” message keeps the WebSocket connection alive even if there are no producers producing real-time messages or real-time heartbeats to the publisher.

Will the order of the events sent through change?

- The order of events received is dependent on the call scenario. You may receive a different sequence of events depending on the current state of the agent.

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