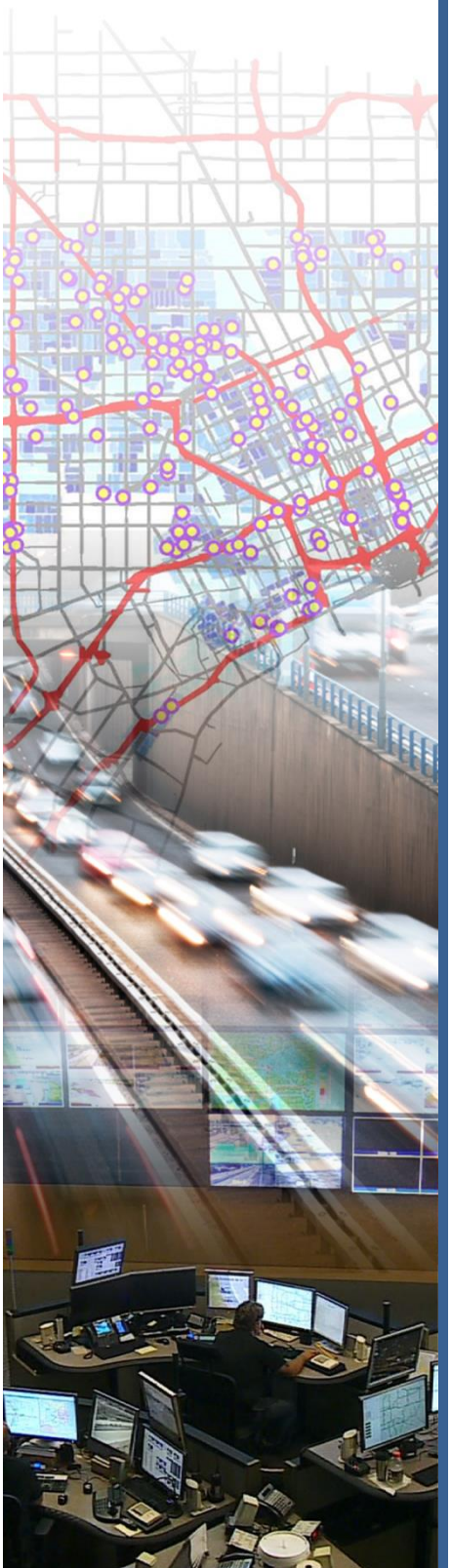
U.S. Department of Transportation

Federal Highway Administration



Southeast Michigan Operational Data Environment

Web UI Users Guide

Version 1.0

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U.S. Department of Transportation (U.S. DOT)
Federal Highway Administration (FHWA)
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Prepared by:

Booz Allen Hamilton 8283 Greensboro Drive McLean, VA 22102

Booz | Allen | Hamilton

8283 Greensboro Drive
McLean, VA 22102

Tel 1 703 902 5000
Fax 1 703 902 3333

www.boozallen.com

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1 Overview

This document provides instructions for how to use the United States Department of Transportation (USDOT) Southeast Michigan (SEMI) Operational Data Environment (ODE) Web-based User Interface (Web UI) to interface with the SEMI ODE. The SEMI ODE is a "headless" system designed to be interfaced primarily by other applications and not by humans. However, a Web UI has been developed for the SEMI ODE for the sole purpose of internal testing and monitoring as well as occasional demonstration of system capabilities to current and prospective stakeholders.

2 System Description

The SEMI ODE is part of USDOT Intelligent Transportation Systems (ITS) Joint Program Office (JPO) connected data systems toolset. In the context of ITS, an Operational Data Environment is a real-time data acquisition and distribution software system that processes and routes data from Connected-X devices – including connected vehicles (CV), personal mobile devices, infrastructure components, and sensors – to subscribing applications to support the operation, maintenance, and use of the transportation system, as well as related research and development efforts.

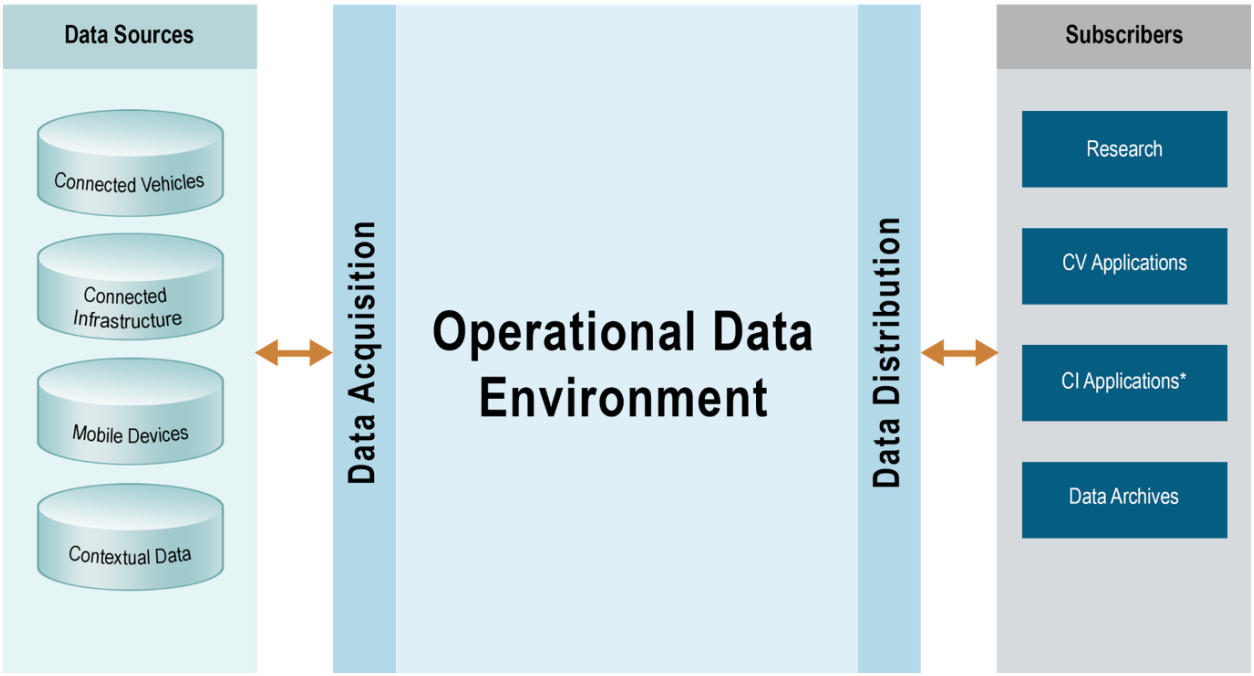


Figure 1 - Overview of an ODE

The SEMI ODE is intended to complement a connected vehicle infrastructure by functioning as a smart data router by brokering processed data from various data sources, including connected vehicles, to a variety of data users. Data users include transportation software applications, such as those that may be used by a Transportation Management Center (TMC).

As a data provisioning service, the SEMI ODE can provision data from disparate data sources to software applications that have placed data subscription requests to the SEMI ODE. These subscribing applications may include CV applications as well as non-CV applications. While provisioning data from data sources for data users, the SEMI ODE also performs necessary security / credential checks and, as needed, data valuation, aggregation, integration, sanitization and propagation functions. These functions are core functions to the SEMI ODE and are detailed in later sections. However, these may be summarized, in no particular order, as the following:

- Data valuation is the process of making a judgment about the quality or value of the data.

- Data integration is the process of combining different data from multiple sources to provide more complete information.
- Data sanitization is the modification of data as originally received in order to reduce or eliminate the possibility that the data can be used to compromise the privacy of the individual(s) that might be linked to the data.
- Data aggregation is the creation of composite or summary information from more granular data.

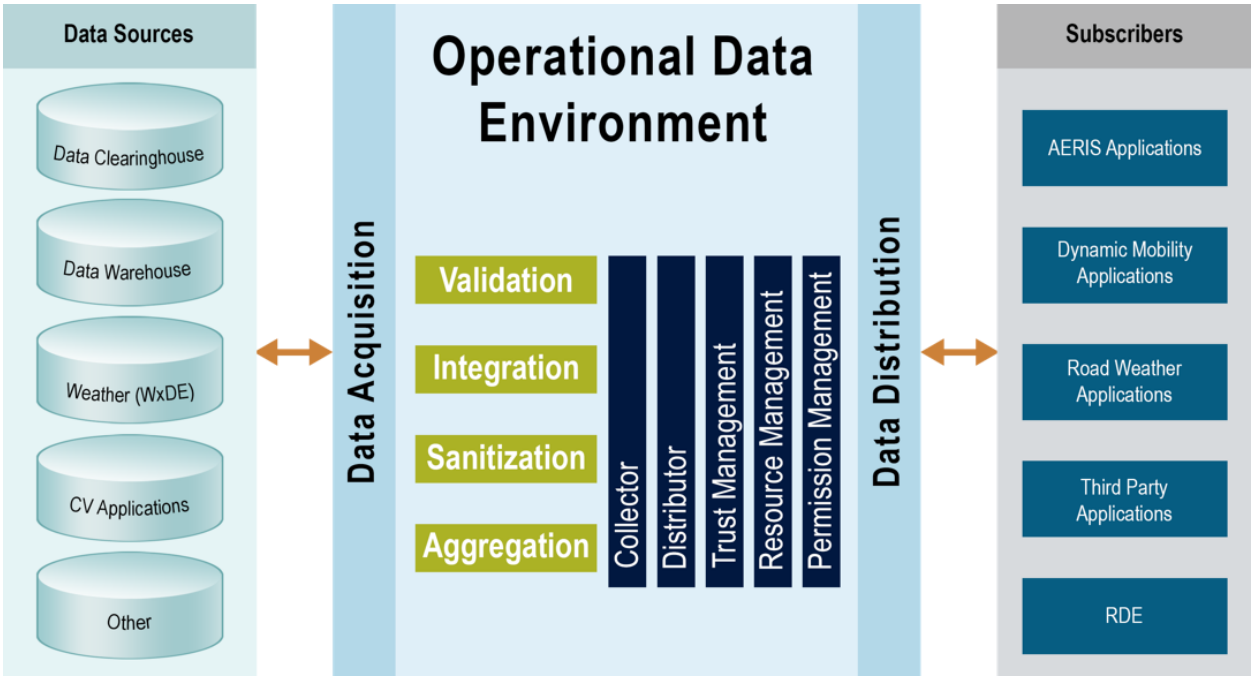


Figure 2 - Overview of SEMI ODE

3 Getting Started

To gain access to the SEMI ODE, you must contact the SEMI ODE administrator by email and provide the following information:

1. Full Name:
2. Organization:
3. Job Title:
4. Email address:
5. Phone number:
6. Reason for access to SEMI ODE:
7. IP Address: Public/external IP address of the location from which you will be accessing the SEMI ODE. One way to obtain your public IP address would be to use an Internet browser from the computer that you will be connecting to the SEMI ODE and browse to either http://whatismyipaddress.com/ or http://www.myipaddress.com/show-my-ip-address/ . Alternatively, you contact your system administrator to obtain your organization's public IP address.

3.1 The ODE Security Portal

When we receive your request and required information, the SEMI ODE administrator will verify your access needs with US DOT and if confirmed will send your SEMI ODE temporary credentials to the email address provided.

TO activate your account, browse the SEMI ODE Security Portal page at the following URL: https://ec2-52-87-98-38.compute-1.amazonaws.com. Enter your email address and the temporary password that was included in you welcome email.

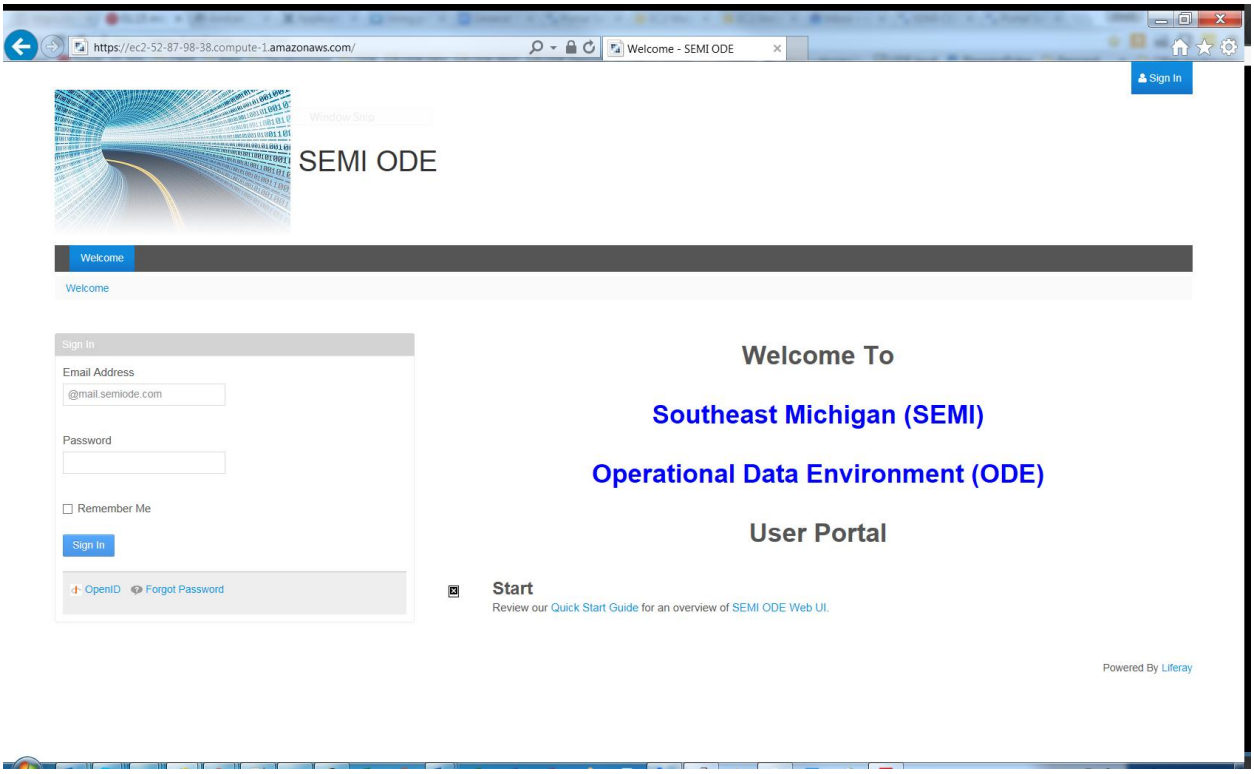


Figure 3 – SEMI ODE Portal Login

You will be required to change your password and chose a security question and answer the first time you log in to your account.

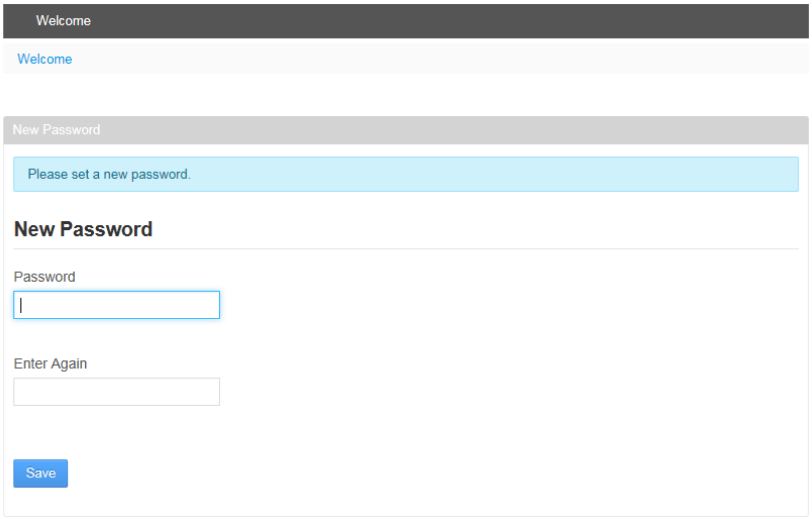


Figure 4 - Password Change

3.2 Configuring Your Browser

The SEMI ODE Web Portal supports all major browsers, including Firefox, Internet Explorer, and Chrome.

3.2.1 HTTPS Communications

Currently, the SEMI ODE Web Portal communicates with your browser via both HTTP and HTTP Secure (HTTPS) communication protocols. When connecting to the SEMI ODE, always connect via the secure web site: https://ec2-52-87-98-38.compute-1.amazonaws.com/ode Communications between your browser and the SEMI ODE Web portal will be encrypted through SEMI ODE Web Portal's SSL Certificate. No special configuration is required to use HTTPS.

Notes: Browsing to https://ec2-52-87-98-38.compute-1.amazonaws.com/ode will return a Certificate Error Message such as the following on Internet Explorer.

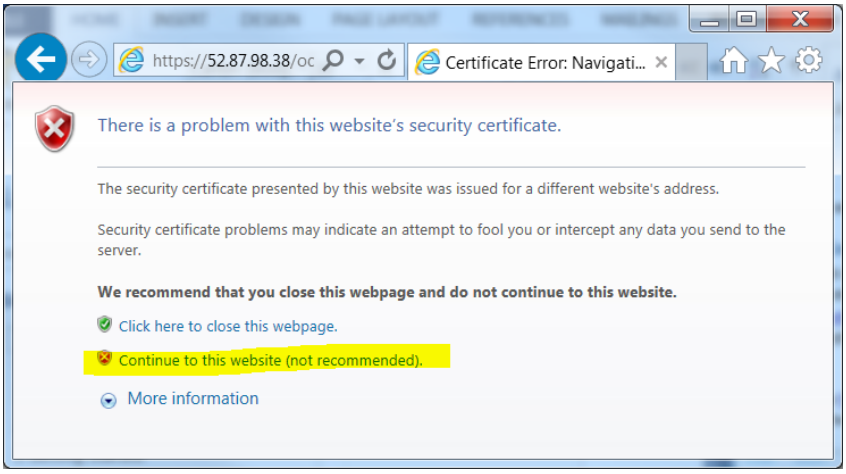
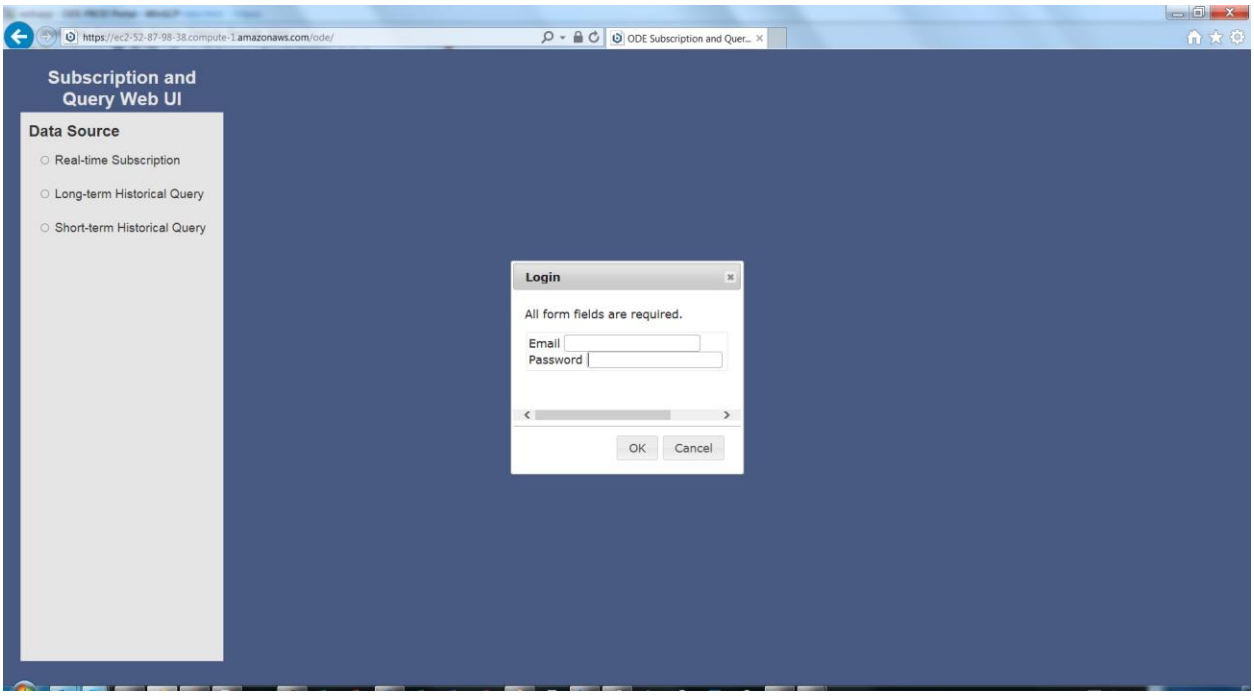


Figure 5 - SSL Security Certificate Warning

This is a security precaution and normal behavior. The Error Message is to inform you that the web address you are visiting and the Security Certificate that enables the HTTPS communication is not from a trusted Certificate Authority. That's normal due to the fact that we use a self-signed certificate which is not recognized by the browser. Feel free to ignore the warning by clicking on the highlighted link: Continue to this website (not recommended).

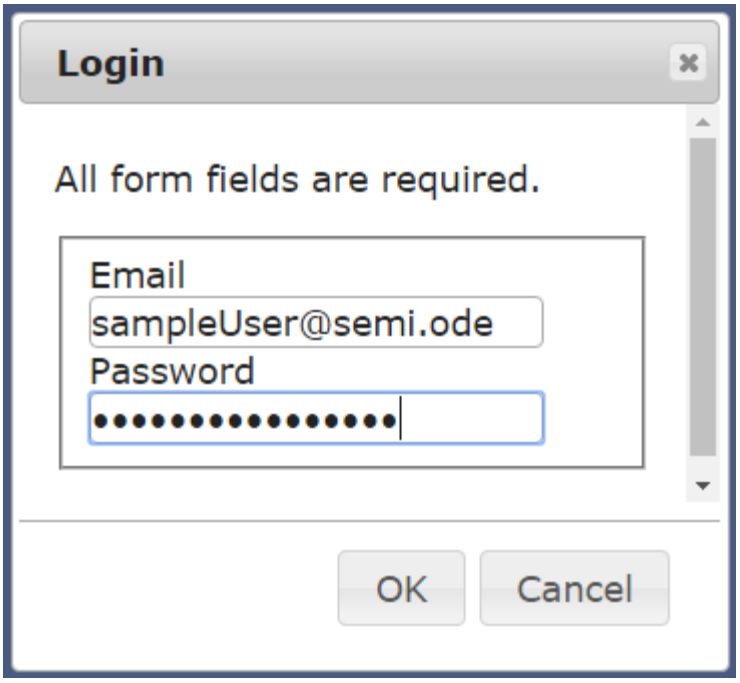
4 The SEMI ODE Web Portal

To access the SEMI ODE Web UI, open your favorite browser and navigate to https://ec2-52-87-98-38.compute-1.amazonaws.com/ode. Ignore the security warning as explained in Section 3.2.1. You will be presented with the "Subscription and Query Web UI" page with a pop-up dialog to Login.



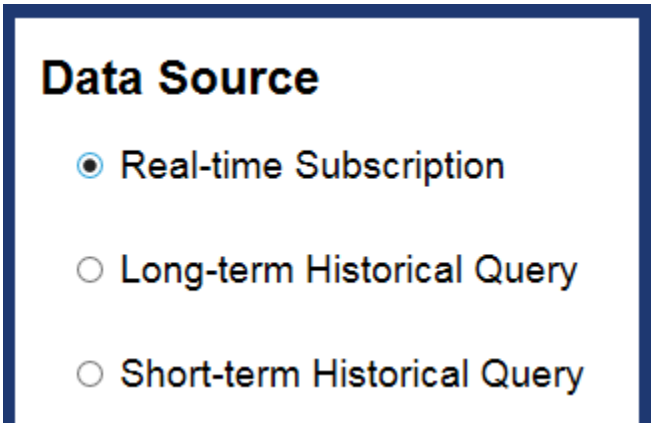
4.1 Login Dialog

Enter your ODE account Email address and password and press Enter or click the OK button.

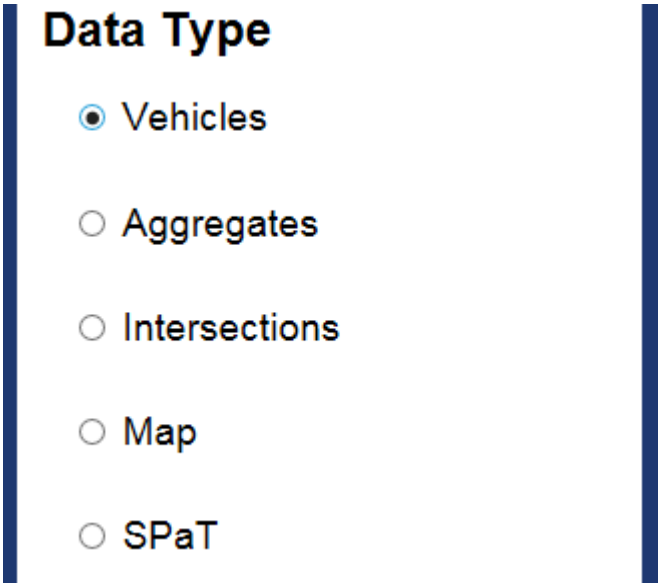


4.2 Subscribing to Real-Time Vehicle Data

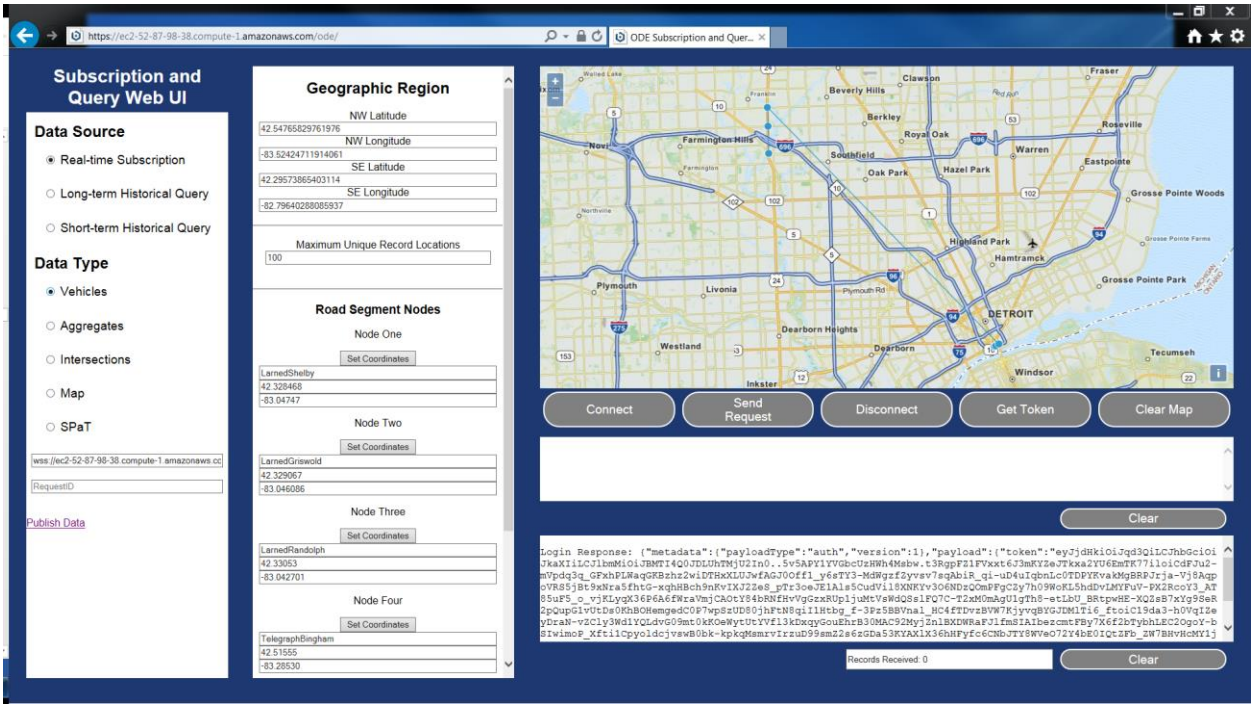
1. After logging in to the SEMI ODE, select “Real-time Subscription” radio button under the “Data Source” category.



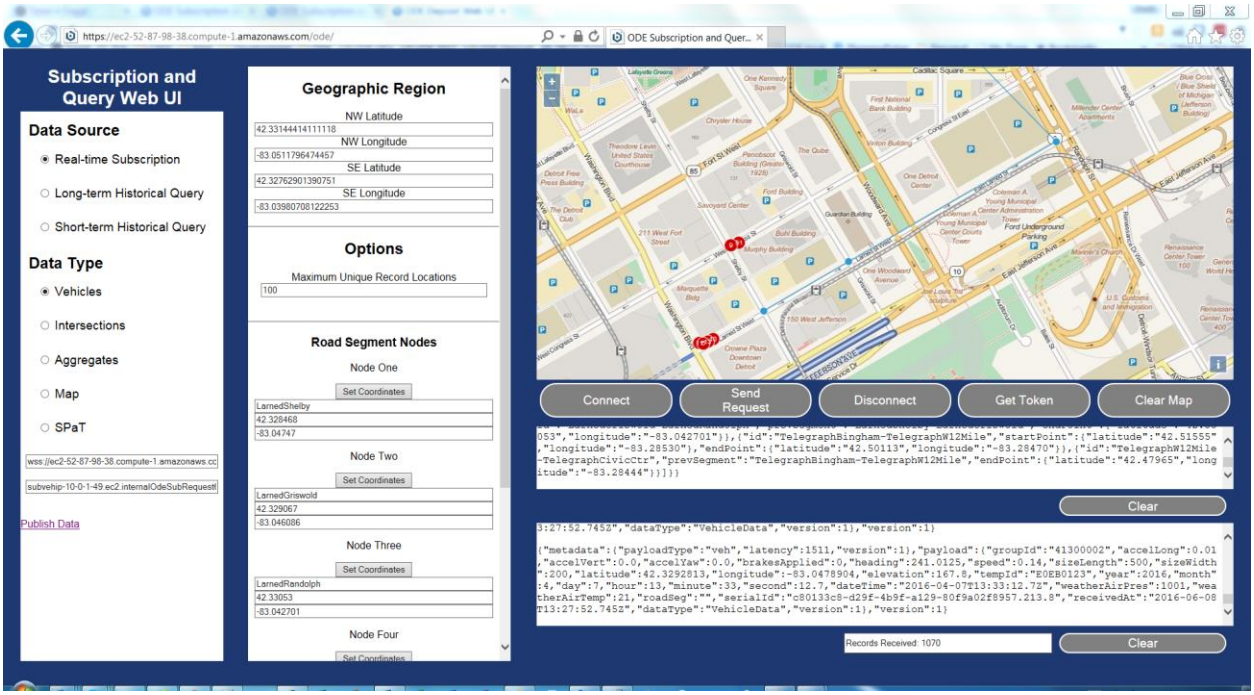
2. Select the “Vehicles” radio button under the “Data Type” category.



3. Select the desired geographic region by zooming in and out and panning (dragging) the map display. You will notice that the values displayed in Geographic Region section of the page will change to reflect the selected region.

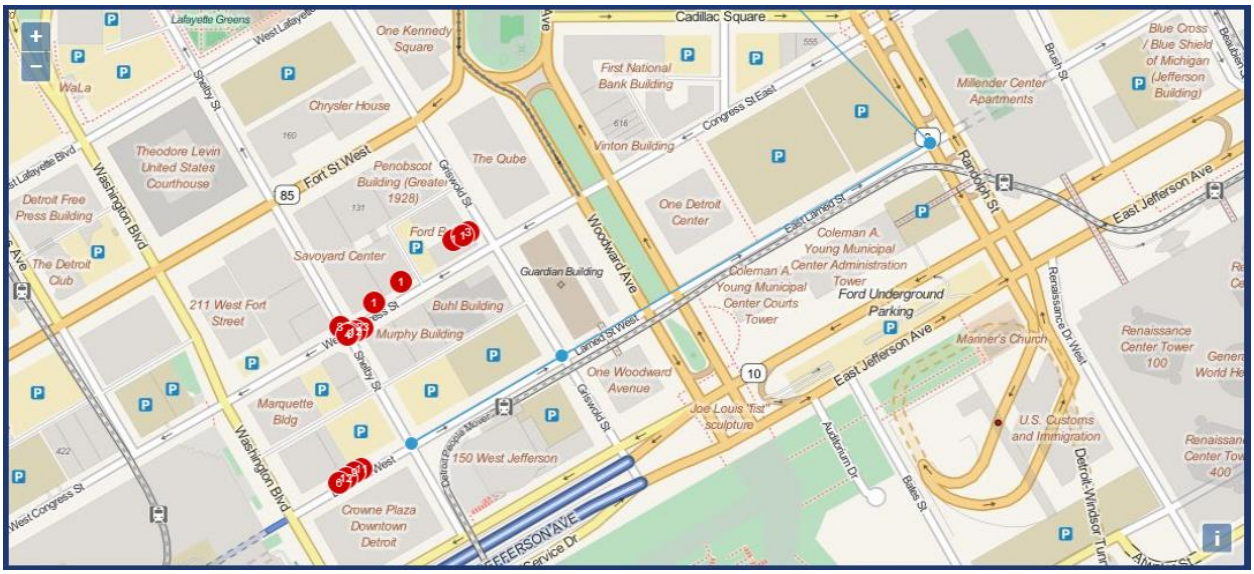


4. “Maximum Unique Record Locations” field specifies how many vehicle records will be displayed on the map at any point in time. Vehicle records received by the Web UI are displayed on the map as a red circle with a number in the center of the circle.

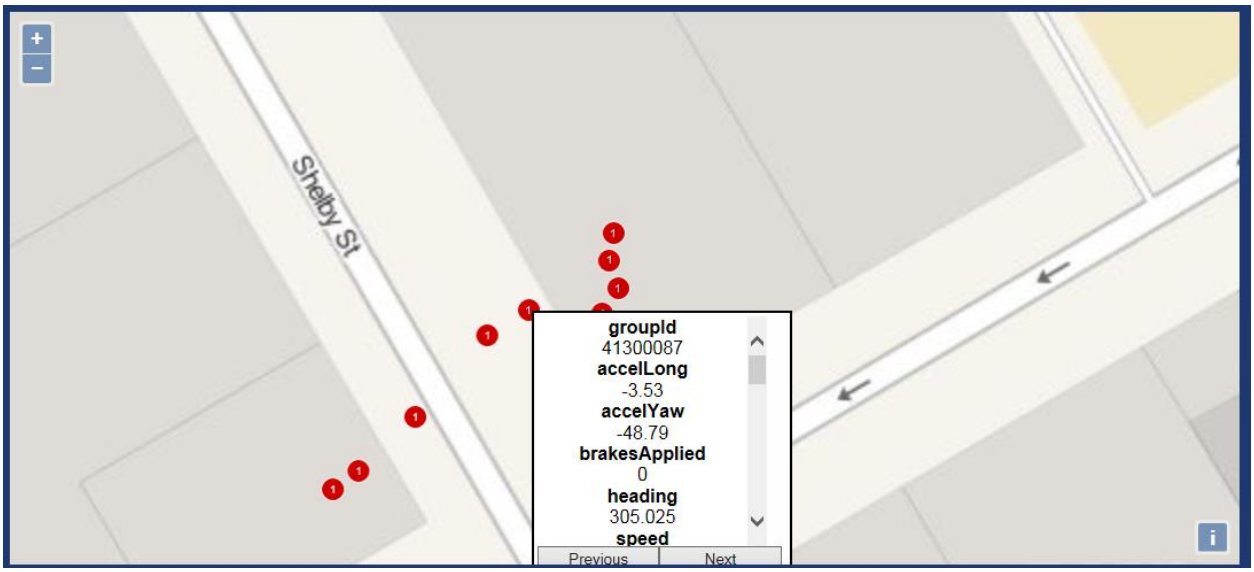


The number represents the number of records overlapping on that spot in the map. If you zoom in long enough, you will eventually see the red circles with a value of 1 representing a single vehicle

record.



If you click on the circle, you will see the data elements contained within that record.

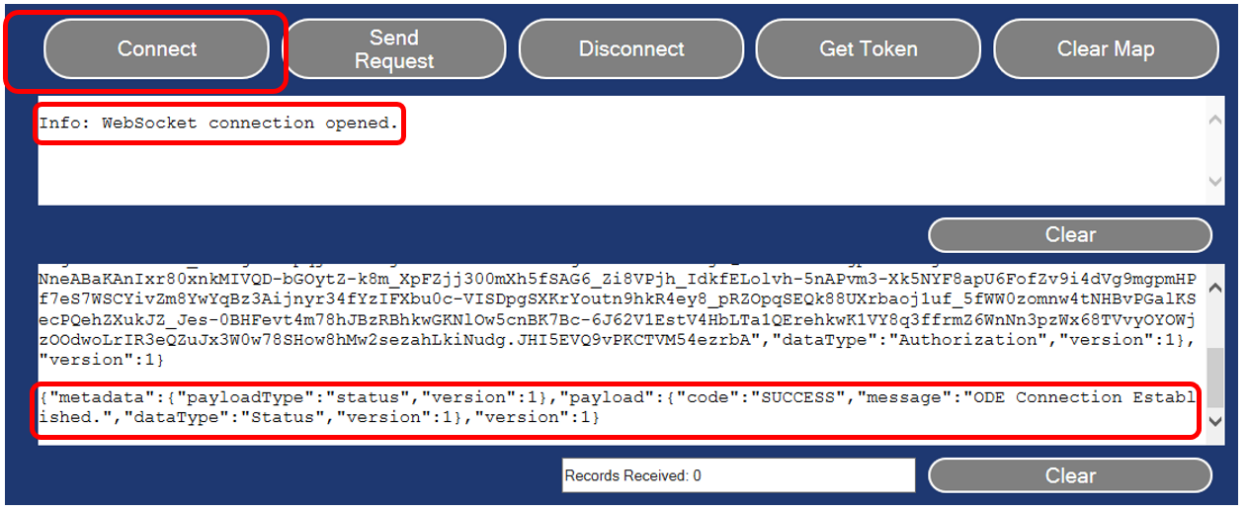


The value entered in “Maximum Unique Record Locations”, therefore, controls how sparse or congested you would like the map to become. When vehicles are traveling on the roads that are displayed on the map, the red circles form a breadcrumb effect. By entering a larger value, the breadcrumb tail behind each vehicle becomes longer and will overlap with other nearby vehicle breadcrumbs. A smaller value will shorten the length of the breadcrumb tail but if it is too small, some records may be missed when the display is updated causing the vehicles disappear from the map or appear out of nowhere.

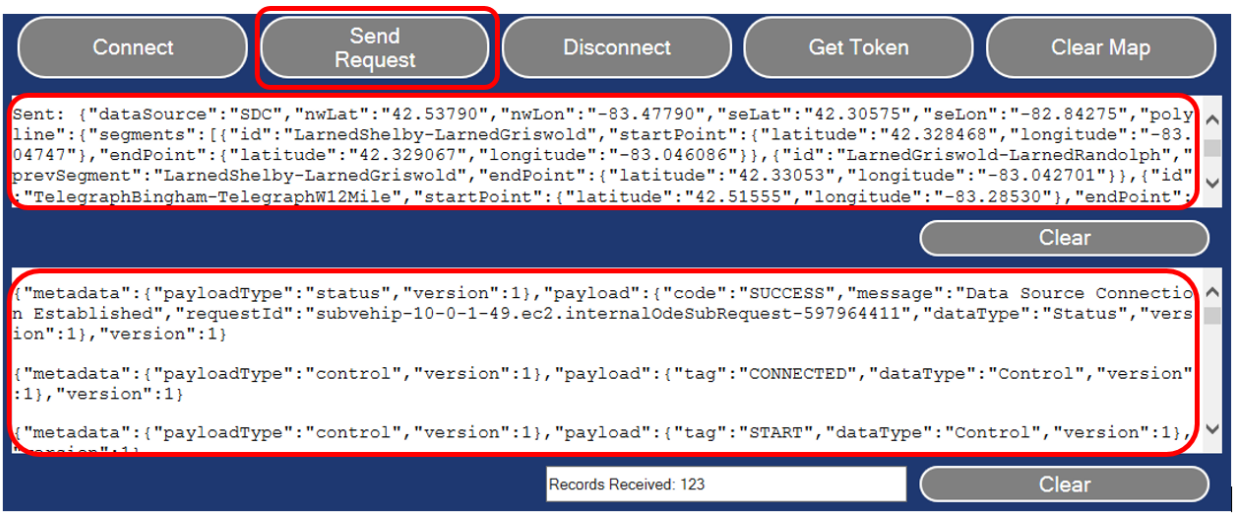
5. (Optional) If you are interested in the identifying which road segment the vehicle is traveling on, you will need to identify the "Road Segment Nodes". Each node is identified by a name or ID, a latitude value and a longitude value. The Web UI by default identifies 5 road segments, 2 actual road segments in downtown Detroit, two other actual road segments along Telegraph Rd in the Novi district and one virtual road segment connecting downtown Detroit to Novi. These 5 road segments are defined by the "Road Segment Nodes" and can be modified by the Web UI user to identify any 5 desired road segments. The road segments are named by concatenating the names of its connecting nodes. Vehicles that are traveling on those road segments, regardless of which direction they travel, are tagged by the road segment name. For example, the following record informs that the vehicle is currently positioned on the road segment `LarnedGriswold-LarnedRandolph` connecting the intersections of `LarnedGriswol` and `LarnedRandolph`

{"metadata":{"payloadType":"veh","latency":1787,"version":1},"payload":{"groupId":"41300090","accelLong":-0.14,"accelYaw":-+130.61,"brakesApplied":0,"heading":55.35,"speed":3.34,"sizeLength":1023,"sizeWidth":1023,"latitude":42.330362,"longitude":-83.0430978,"elevation":155.0,"tempId":"4D965B28","year":2016,"month":4,"day":7,"hour":13,"minute":34,"second":26.3,"dateTime":"2016-04-07T13:34:26.3Z","weatherAirPres":1002,"weatherAirTemp":22,**"roadSeg":"LarnedGriswold-LarnedRandolph"**,"serialId":"e2657e92-ddfc-4268-a49c-9bdc41b4def9.32.8","receivedAt":"2016-06-08T13:53:49.496Z","dataType":"VehicleData","version":1},"version":1}

6. After setting up all the subscription request parameters, connect to the ODE by pressing the Connect button. You should now see the highlighted messages in the top console window (Sent Messages) and the bottom console window (Received Messages). Note the text `"code":"SUCCESS"` in the message payload. If the connection is successful, then proceed to the next step.



7. If the connection was successful in the previous step, the "Send Request" button is enabled. That is indicated by the button changing color when you hover the mouse pointer over the button. Press "Send Request".



You will see a message similar to the following in "Sent Messages console:


```
Sent: {"dataSource":"SDC","nwLat":"42.53790","nwLon":"-
83.47790","seLat":"42.30575","seLon":"-
82.84275","polyline":{"segments":[{"id":"LarnedShelby-
LarnedGriswold","startPoint":{"latitude":"42.328468","longitude":"-
83.04747"},"endPoint":{"latitude":"42.329067","longitude":"-
83.046086"}},{"id":"LarnedGriswold-
LarnedRandolph","prevSegment":"LarnedShelby-
LarnedGriswold","endPoint":{"latitude":"42.33053","longitude":"-
83.042701"}},{"id":"TelegraphBingham-
TelegraphW12Mile","startPoint":{"latitude":"42.51555","longitude":"-
83.28530"},"endPoint":{"latitude":"42.50113","longitude":"-
83.28470"}},{"id":"TelegraphW12Mile-
TelegraphCivicCtr","prevSegment":"TelegraphBingham-
TelegraphW12Mile","endPoint":{"latitude":"42.47965","longitude":"-
83.28444"}}]}}
```

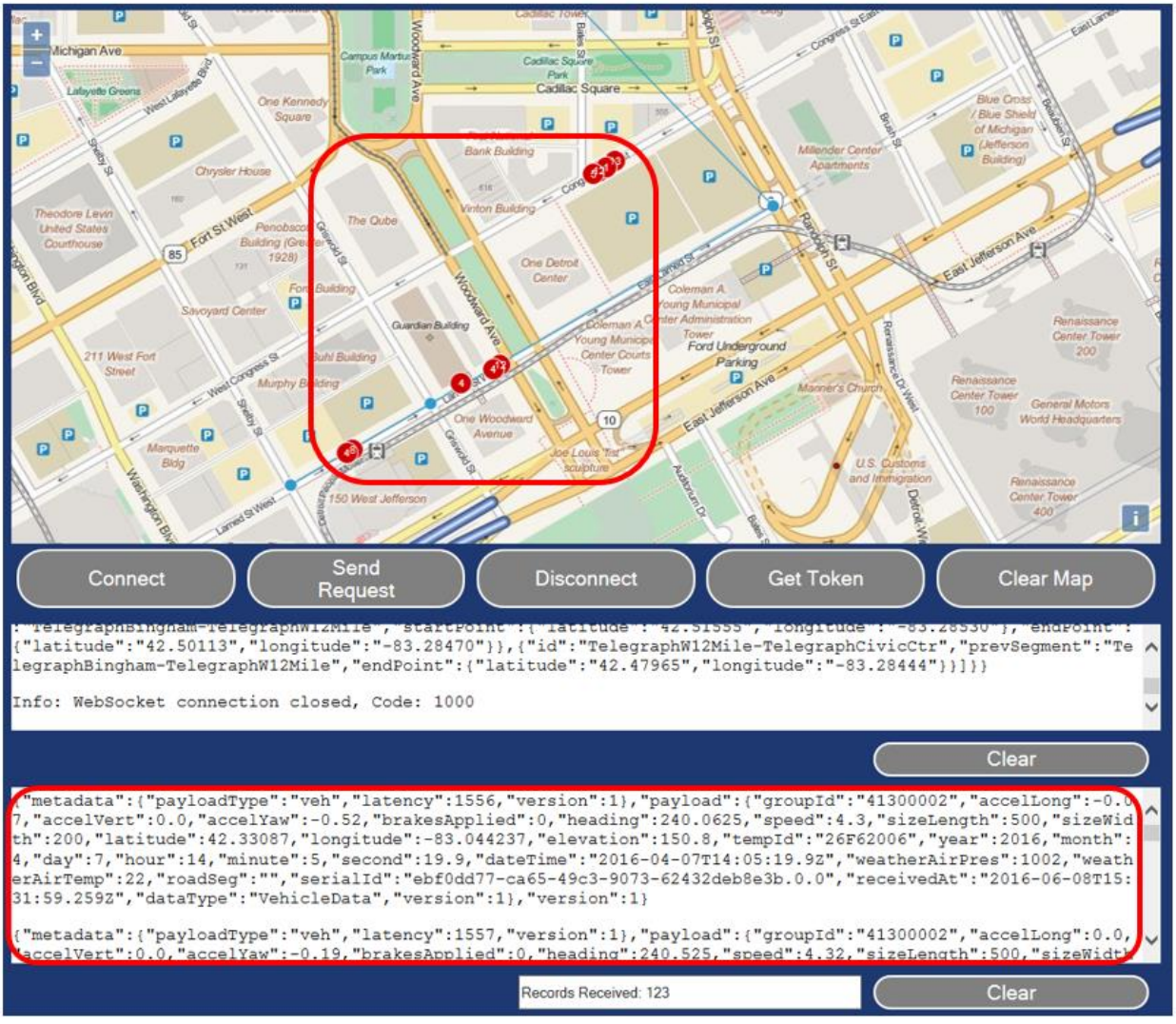

This is the subscription request message that the Web UI sent to the SEMI ODE to establish a Vehicle Data subscription. Conversely, the following types of messages will be received by the Web UI.


```
{"metadata":{"payloadType":"status","version":1},"payload":{"code":"SUC
CESS","message":"ODE Connection
Established.","dataType":"Status","version":1},"version":1}

{"metadata":{"payloadType":"status","version":1},"payload":{"code":"SUC
CESS","message":"Data Source Connection
Established","requestId":"subvehip-10-0-1-49.ec2.internalOdeSubRequest-
597964411","dataType":"Status","version":1},"version":1}

{"metadata":{"payloadType":"control","version":1},"payload":{"tag":"CON
NECTED","dataType":"Control","version":1},"version":1}

{"metadata":{"payloadType":"control","version":1},"payload":{"tag":"STA
RT","dataType":"Control","version":1},"version":1}
```

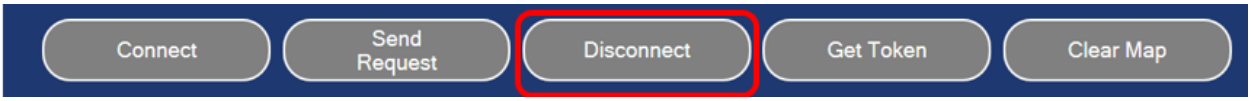

Followed by the data messages.

{"metadata":{"payloadType":"veh","latency":1787,"version":1},"payload":{"groupId":"41300090","accelLong":-0.14,"accelYaw":-+130.61,"brakesApplied":0,"heading":55.35,"speed":3.34,"sizeLength":1023,"sizeWidth":1023,"latitude":42.330362,"longitude":-83.0430978,"elevation":155.0,"tempId":"4D965B28","year":2016,"month":4,"day":7,"hour":13,"minute":34,"second":26.3,"dateTime":"2016-04-07T13:34:26.3Z","weatherAirPres":1002,"weatherAirTemp":22,"roadSeg":"LarnedGriswold-LarnedRandolph","serialId":"e2657e92-ddfc-4268-a49c-9bdc41b4def9.32.8","receivedAt":"2016-06-08T13:53:49.496Z","dataType":"VehicleData","version":1},"version":1}

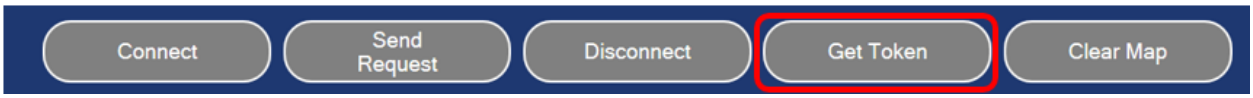
You should also observe red circles representing vehicle records appearing on the map.



8. When you no longer wish to receive data, press the “Disconnect” button.



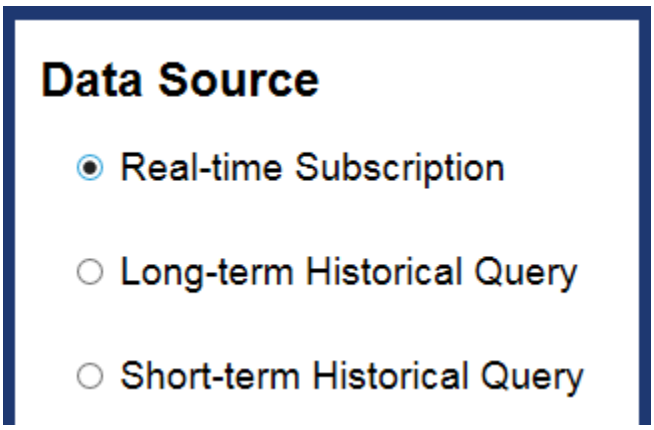
9. To re-subscribe to vehicle data you must repeat steps 6 through 8. However, the token that the Web UI received upon initial Login may be expired depending on the duration of the elapsed time from the previous login. You may need to re-authenticate before you are allowed to subscribe to data again. To re-authenticate, press the "Get Token" button and repeat steps described in section 4.1.



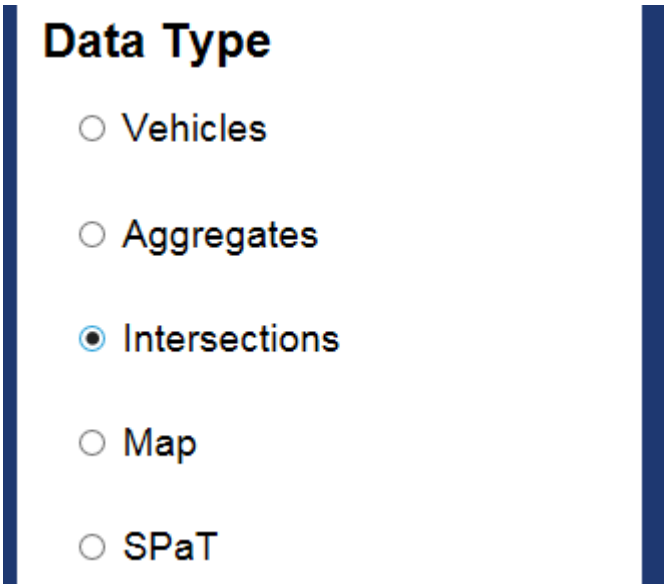
10. To clear the contents of the map, or any of the console sections, press the corresponding Clear button.

4.3 Subscribing to Real-time Intersection Data

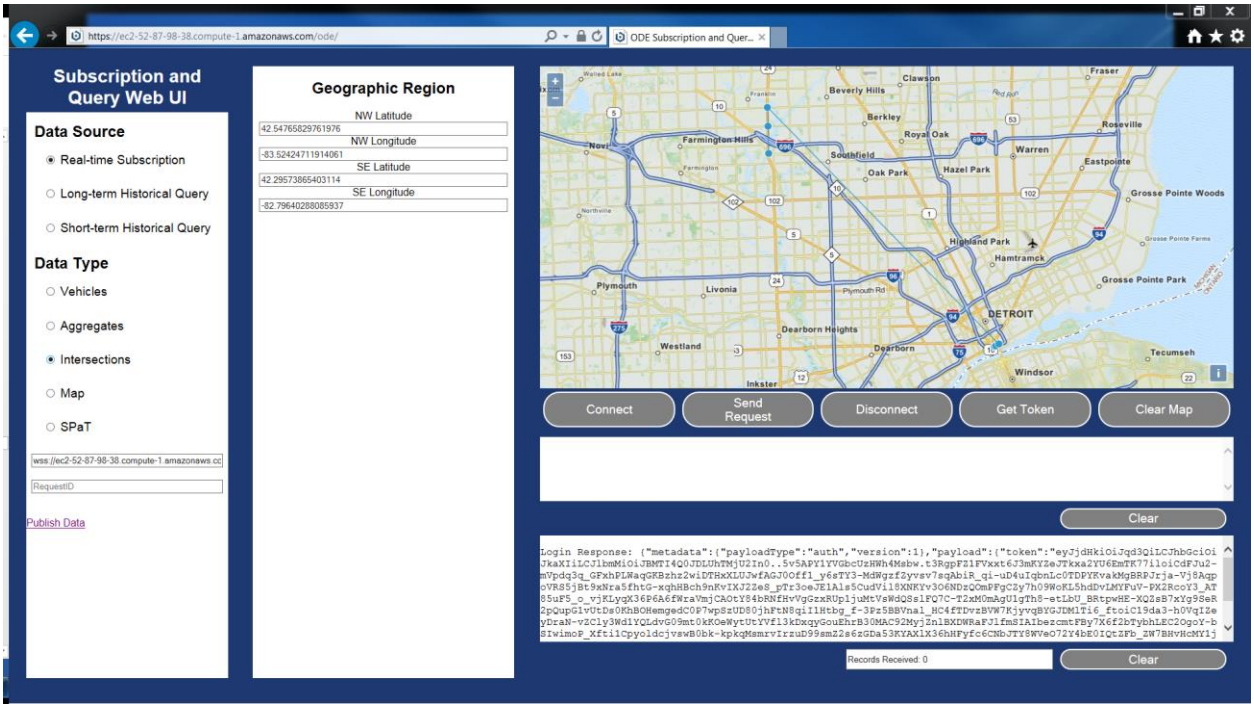
1. After logging in to the SEMI ODE, select "Real-time Subscription" radio button under the "Data Source" category.



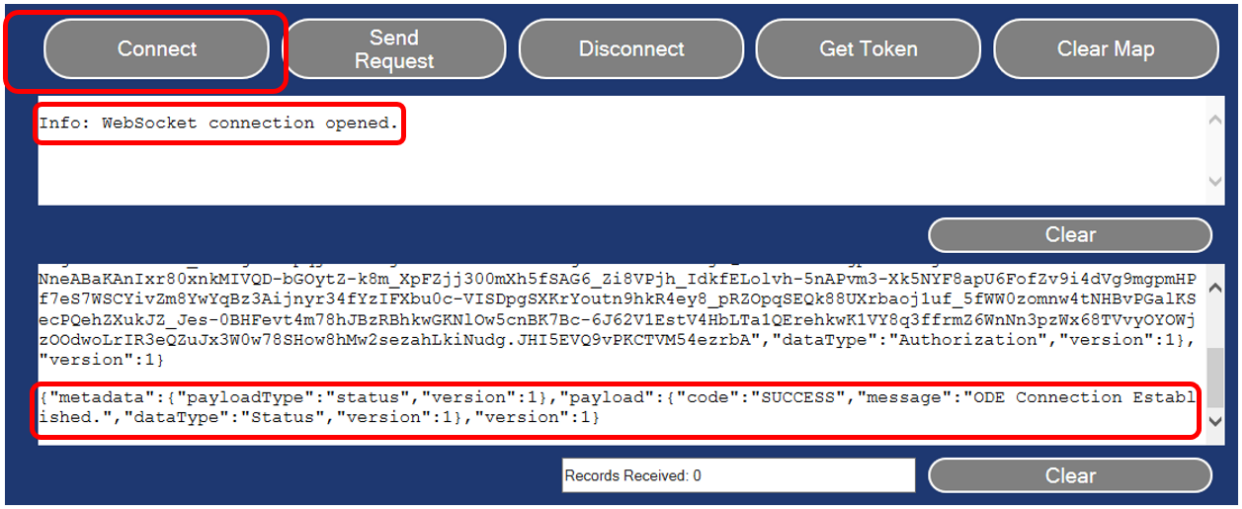
2. Select the "Intersections" radio button under the "Data Type" category. Intersection data consists of two components, "Map" and "Signal Phase and Timing (SPaT)". If you are only interested in one or the other, you may select "Map" or "SPaT" radio buttons instead, in order to reduce transmission bandwidth utilization.



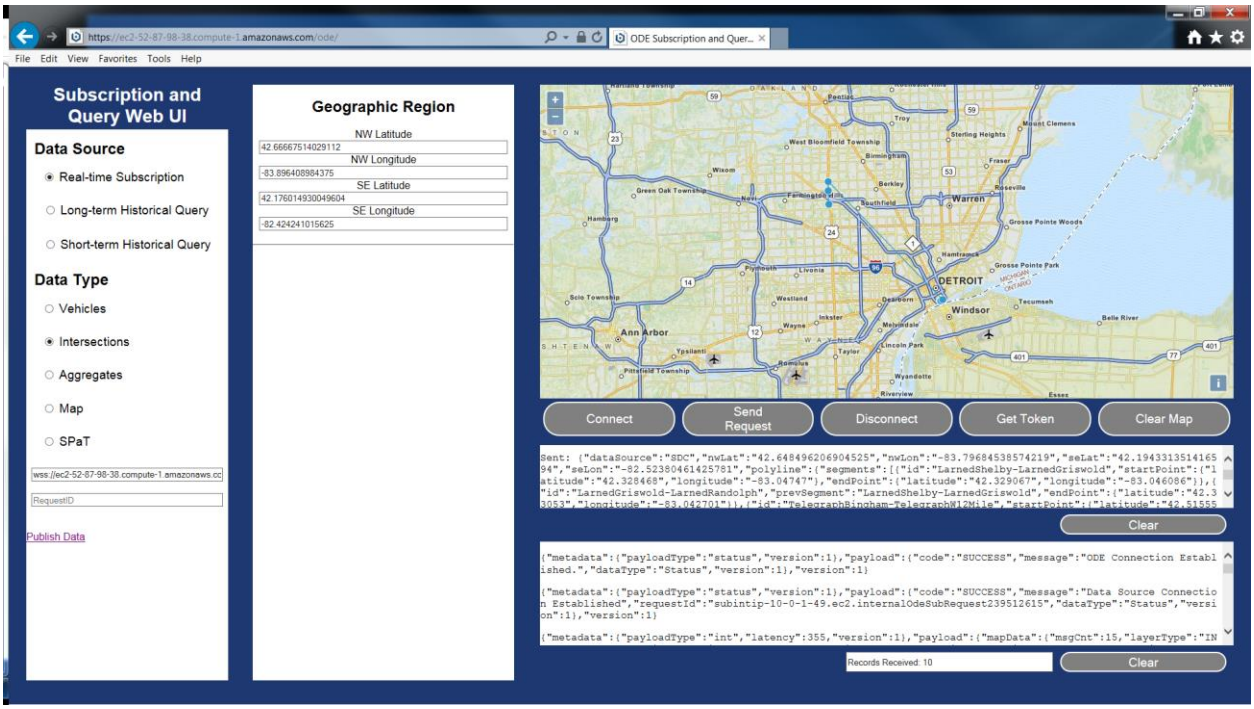
3. Select the desired geographic region by zooming in and out and panning (dragging) the map display. You will notice that the values displayed in Geographic Region section of the page will change to reflect the selected region.



4. After setting up the subscription request parameters, connect to the ODE by pressing the Connect button. You should now see the highlighted messages in the top console window (Sent Messages) and the bottom console window (Received Messages). Note the text `"code":"SUCCESS"` in the message payload. If the connection is successful, then proceed to the next step.



5. If the connection was successful in the previous step, the “Send Request” button is enabled. That is indicated by the button changing color when you hover the mouse pointer over the button. Press “Send Request”.



You will see a message similar to the following in "Sent Messages console:

```
Sent: {"dataSource":"SDC","nwLat":"42.648496206904525","nwLon":"-
83.79684538574219","seLat":"42.194331351416594","seLon":"-
82.52380461425781","polyline":{"segments":[{"id":"LarnedShelby-
LarnedGriswold","startPoint":{"latitude":"42.328468","longitude":"-
83.04747"},"endPoint":{"latitude":"42.329067","longitude":"-
83.046086"}},{"id":"LarnedGriswold-
LarnedRandolph","prevSegment":"LarnedShelby-
LarnedGriswold","endPoint":{"latitude":"42.33053","longitude":"-
83.042701"}},{"id":"TelegraphBingham-
TelegraphW12Mile","startPoint":{"latitude":"42.51555","longitude":"-
83.28530"},"endPoint":{"latitude":"42.50113","longitude":"-
83.28470"}},{"id":"TelegraphW12Mile-
TelegraphCivicCtr","prevSegment":"TelegraphBingham-
TelegraphW12Mile","endPoint":{"latitude":"42.47965","longitude":"-
83.28444"}}]}}
```

This is the subscription request message that the Web UI sent to the SEMI ODE to establish the subscription. Conversely, the following types of messages will be received by the Web UI.

```
{"metadata":{"payloadType":"status","version":1},"payload":{"code":"SUC
CESS","message":"ODE Connection
Established.","dataType":"Status","version":1},"version":1}

{"metadata":{"payloadType":"status","version":1},"payload":{"code":"SUC
CESS","message":"Data Source Connection
Established","requestId":"subvehip-10-0-1-49.ec2.internalOdeSubRequest-
597964411","dataType":"Status","version":1},"version":1}
```

```
{"metadata":{"payloadType":"control","version":1},"payload":{"tag":"CON
NECTED","dataType":"Control","version":1},"version":1}

{"metadata":{"payloadType":"control","version":1},"payload":{"tag":"STA
RT","dataType":"Control","version":1},"version":1}
```


Followed by the data messages.


```
{"metadata":{"payloadType":"int","latency":355,"version":1},"payload":{
"mapData":{"msgCnt":15,"layerType":"INTERSECTION_DATA","intersections":
[{"name":"149","id":"0095","refPoint":{"latitude":42.327356,"longitude"
:-
83.048093},"approaches":[{"approach":{"name":"NorthBound","id":1,"drivi
ngLanes":[{"laneAttributes":{"attributes":6},"laneNumber":1,"laneWidth"
:300,"nodeList":[{"xOffsetCm":632,"yOffsetCm":-
821},{"xOffsetCm":1314,"yOffsetCm":-
2307}]},{"laneAttributes":{"attributes":2},"laneNumber":2,"laneWidth":3
00,"nodeList":[{"xOffsetCm":977,"yOffsetCm":-
610},{"xOffsetCm":1347,"yOffsetCm":-
2307}]}]}},{"approach":{"name":"WestBound","id":2,"drivingLanes":[{"lan
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:[{"xOffsetCm":1388,"yOffsetCm":410},{"xOffsetCm":7321,"yOffsetCm":4260
}]},{"laneAttributes":{"attributes":10},"laneNumber":4,"laneWidth":300,
"nodeList":[{"xOffsetCm":1207,"yOffsetCm":698},{"xOffsetCm":7329,"yOffs
etCm":4249}]},{"laneAttributes":{"attributes":8},"laneNumber":5,"laneWi
dth":300,"nodeList":[{"xOffsetCm":1060,"yOffsetCm":998},{"xOffsetCm":72
88,"yOffsetCm":4204}]}]}},{"approach":{"name":"SouthBound","id":3,"driv
ingLanes":[{"laneAttributes":{"attributes":2},"laneNumber":6,"laneWidth
":300,"nodeList":[{"xOffsetCm":-829,"yOffsetCm":920},{"xOffsetCm":-
2908,"yOffsetCm":4548}]},{"laneAttributes":{"attributes":10},"laneNumbe
r":7,"laneWidth":300,"nodeList":[{"xOffsetCm":-
1166,"yOffsetCm":743},{"xOffsetCm":-
2867,"yOffsetCm":4515}]}]}}]}]},"spatData":{"dateTime":{"year":2016,"mo
nth":6,"day":9,"hour":13,"minute":46,"second":12.0},"timestamp":"2016-
06-
09T13:46:12Z","intersections":{"id":"00000095","status":{"status":"00"}
,"states":[{"laneSet":[1,2],"currState":4,"timeToChange":159,"stateConf
idence":"timeLikelyToChange","yellStateConfidence":"timeLikelyToChange"
},{"laneSet":[3,4,5],"currState":1,"timeToChange":128,"stateConfidence"
:"timeLikelyToChange","yellStateConfidence":"timeLikelyToChange"},{"lan
eSet":[6,7],"currState":4,"timeToChange":159,"stateConfidence":"timeLik
elyToChange","yellStateConfidence":"timeLikelyToChange"}]}},"centerPosi
tion":{"latitude":42.32996695,"longitude":-
83.04814945},"groupID":"41300095","serviceRegion":{"nwCorner":{"latitud
e":42.33344,"longitude":-
83.0600429},"seCorner":{"latitude":42.3264939,"longitude":-
83.036256}},"serialId":"6f94a67e-256f-40a1-8275-
f5d6be9f511d.0.0","receivedAt":"2016-06-
09T13:46:12.144Z","dataType":"IntersectionData","version":1},"version":
1}
```
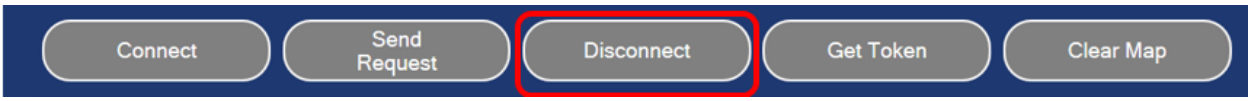


Note: Intersection data messages do not currently display any indicators on the Map.

6. When you no longer wish to receive data, press the “Disconnect” button.

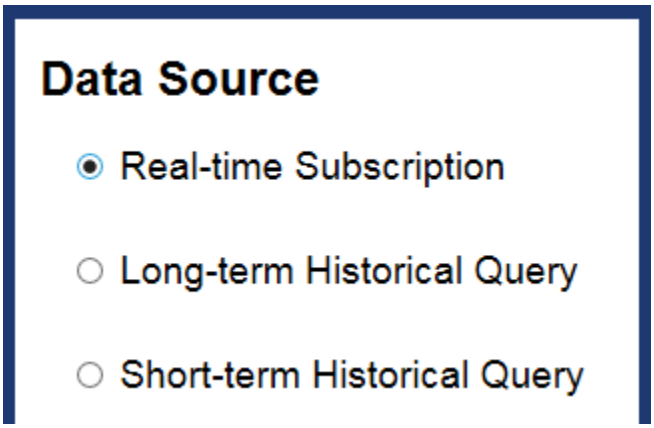


7. To re-subscribe to vehicle data you must repeat steps 6 through 8. However, the token that the Web UI received upon initial Login may be expired depending on the duration of the elapsed time from the previous login. You may need to re-authenticate before you are allowed to subscribe to data again. To re-authenticate, press the "Get Token" button and repeat steps described in section 4.1.

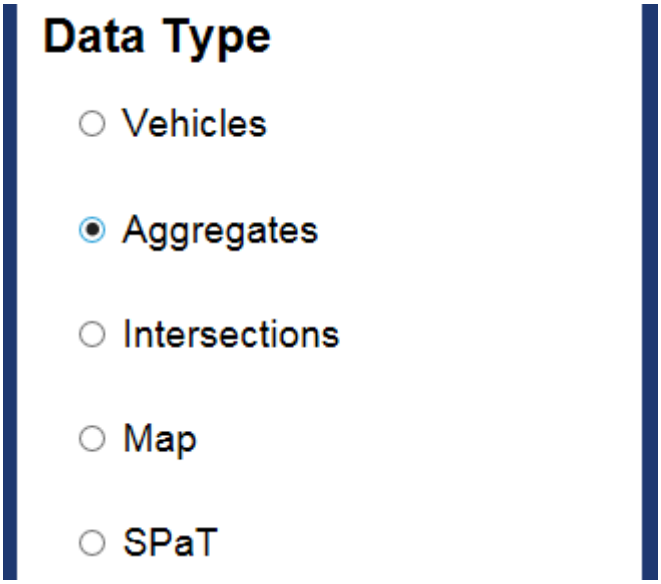
8. To clear the contents of the console sections, press the corresponding Clear button.

4.4 Subscribing to Real-time Aggregate Data

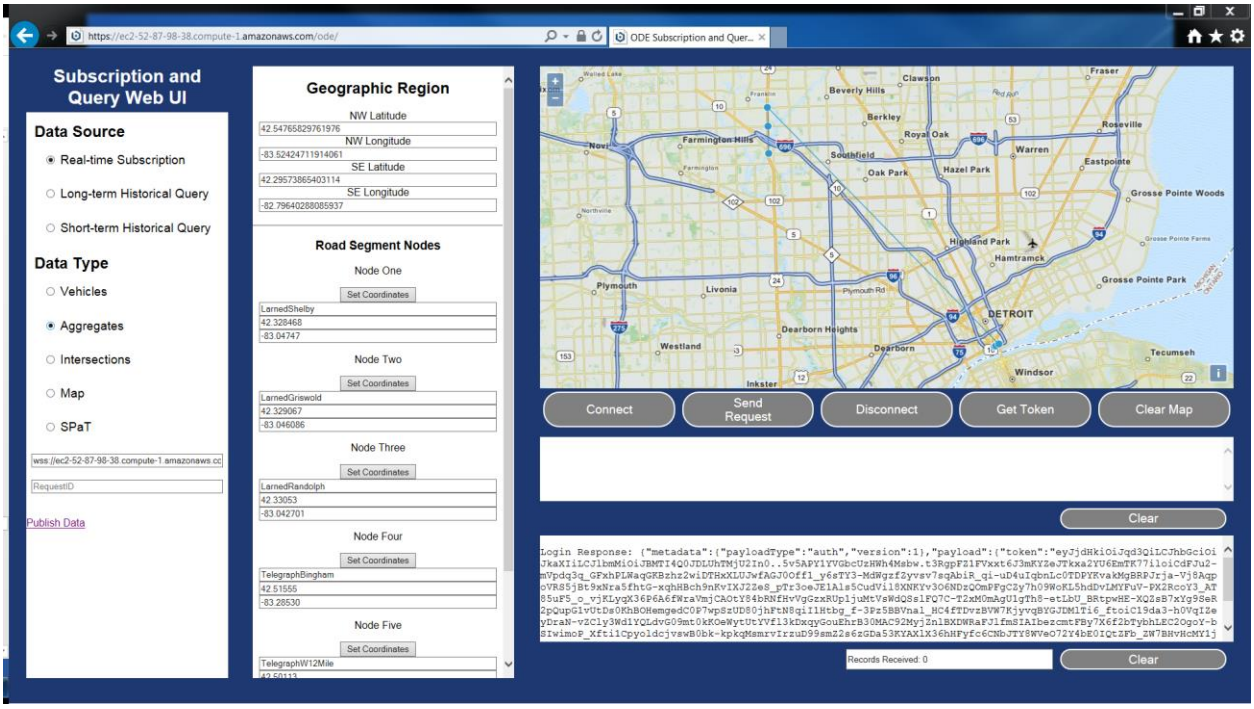
9. After logging in to the SEMI ODE, select "Real-time Subscription" radio button under the "Data Source" category.



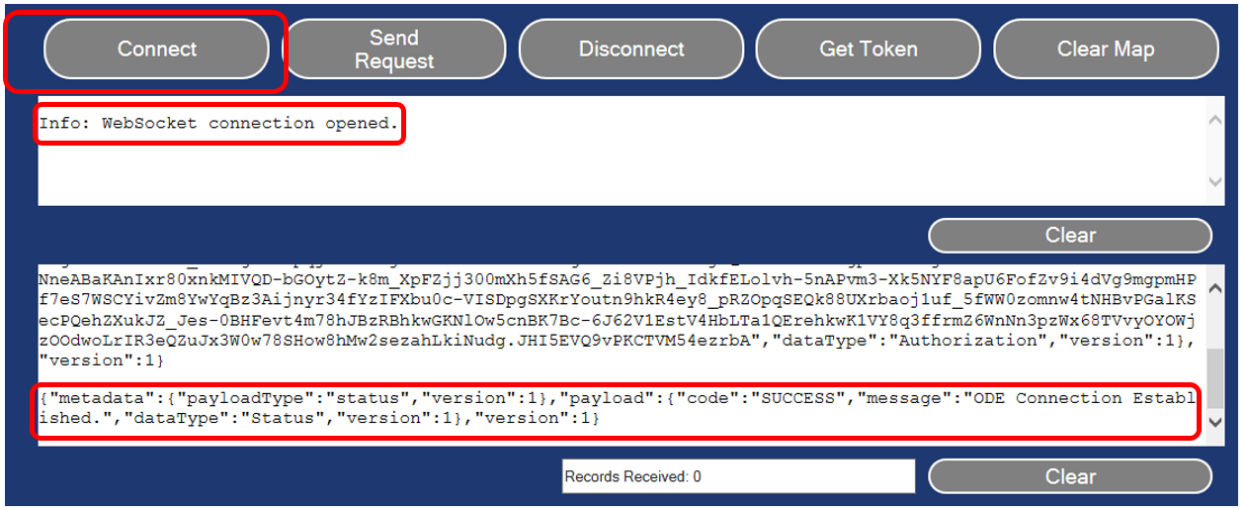
10. Select the "Aggregates" radio button under the "Data Type" category. Aggregate data provides the count, minimum, maximum and average speeds of vehicles traveling on the designated road segments.



11. Select the desired geographic region by zooming in and out and panning (dragging) the map display. You will notice that the values displayed in Geographic Region section of the page will change to reflect the selected region.



12. After setting up the subscription request parameters, connect to the ODE by pressing the Connect button. You should now see the highlighted messages in the top console window (Sent Messages) and the bottom console window (Received Messages). Note the text "`code`" : "`SUCCESS`" in the message payload. If the connection is successful, then proceed to the next step.



13. If the connection was successful in the previous step, the "Send Request" button is enabled. That is indicated by the button changing color when you hover the mouse pointer over the button. Press "Send Request".

    You will see a message similar to the following in "Sent Messages console:

```
Sent: {"dataSource":"SDC","nwLat":"42.648496206904525","nwLon":"-
83.79684538574219","seLat":"42.194331351416594","seLon":"-
82.52380461425781","polyline":{"segments":[{"id":"LarnedShelby-
LarnedGriswold","startPoint":{"latitude":"42.328468","longitude":"-
83.04747"},"endPoint":{"latitude":"42.329067","longitude":"-
83.046086"}},{"id":"LarnedGriswold-
LarnedRandolph","prevSegment":"LarnedShelby-
LarnedGriswold","endPoint":{"latitude":"42.33053","longitude":"-
83.042701"}},{"id":"TelegraphBingham-
TelegraphW12Mile","startPoint":{"latitude":"42.51555","longitude":"-
83.28530"},"endPoint":{"latitude":"42.50113","longitude":"-
83.28470"}},{"id":"TelegraphW12Mile-
TelegraphCivicCtr","prevSegment":"TelegraphBingham-
TelegraphW12Mile","endPoint":{"latitude":"42.47965","longitude":"-
83.28444"}}]}}
```

    This is the subscription request message that the Web UI sent to the SEMI ODE to establish the subscription. Conversely, the following types of messages will be received by the Web UI.

```
{"metadata":{"payloadType":"status","version":1},"payload":{"code":"SUC
CESS","message":"ODE Connection
Established.","dataType":"Status","version":1},"version":1}

{"metadata":{"payloadType":"status","version":1},"payload":{"code":"SUC
CESS","message":"Data Source Connection
Established","requestId":"subvehip-10-0-1-49.ec2.internalOdeSubRequest-
597964411","dataType":"Status","version":1},"version":1}

{"metadata":{"payloadType":"control","version":1},"payload":{"tag":"CON
NECTED","dataType":"Control","version":1},"version":1}
```

{"metadata":{"payloadType":"control","version":1},"payload":{"tag":"START","dataType":"Control","version":1},"version":1}

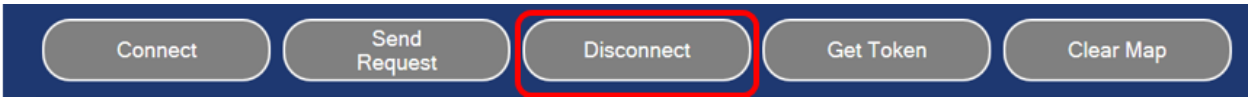
Followed by the data messages.

{"metadata":{"payloadType":"agg","latency":61,"version":1},"payload":{"key":"","count":4650,"minSpeed":0.0,"avgSpeed":3.5099913978494603,"maxSpeed":12.14,"serialId":"c15d8b17-2b20-48f1-bf43-ba5386279e93.0.0","receivedAt":"2016-06-09T14:13:50.287Z","dataType":"AggregateData","version":1},"version":1}

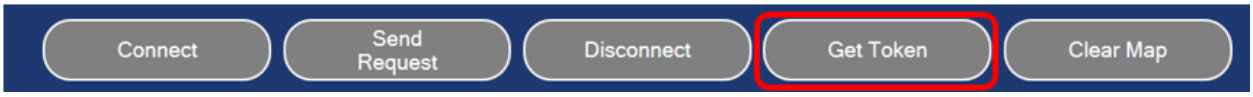
{"metadata":{"payloadType":"agg","latency":487,"version":1},"payload":{"key":"LarnedGriswold-LarnedRandolph","count":22,"minSpeed":9.56,"avgSpeed":10.228181818181817,"maxSpeed":11.2,"serialId":"8f35e925-2a0b-4b67-aed1-c85f673b1752.0.0","receivedAt":"2016-06-09T14:16:04.596Z","dataType":"AggregateData","version":1},"version":1}

Note: Aggregate data messages do not currently display any indicators on the Map.

14. When you no longer wish to receive data, press the “Disconnect” button.



15. To re-subscribe to vehicle data you must repeat steps 6 through 8. However, the token that the Web UI received upon initial Login may be expired depending on the duration of the elapsed time from the previous login. You may need to re-authenticate before you are allowed to subscribe to data again. TO re-authenticate, press the “Get Token” button and repeat steps described in section 4.1.



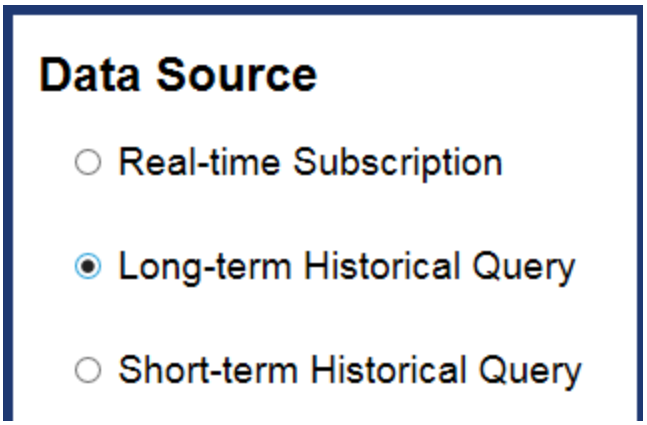
16. To clear the contents of the console sections, press the corresponding Clear button.

4.5 Querying Historical Data

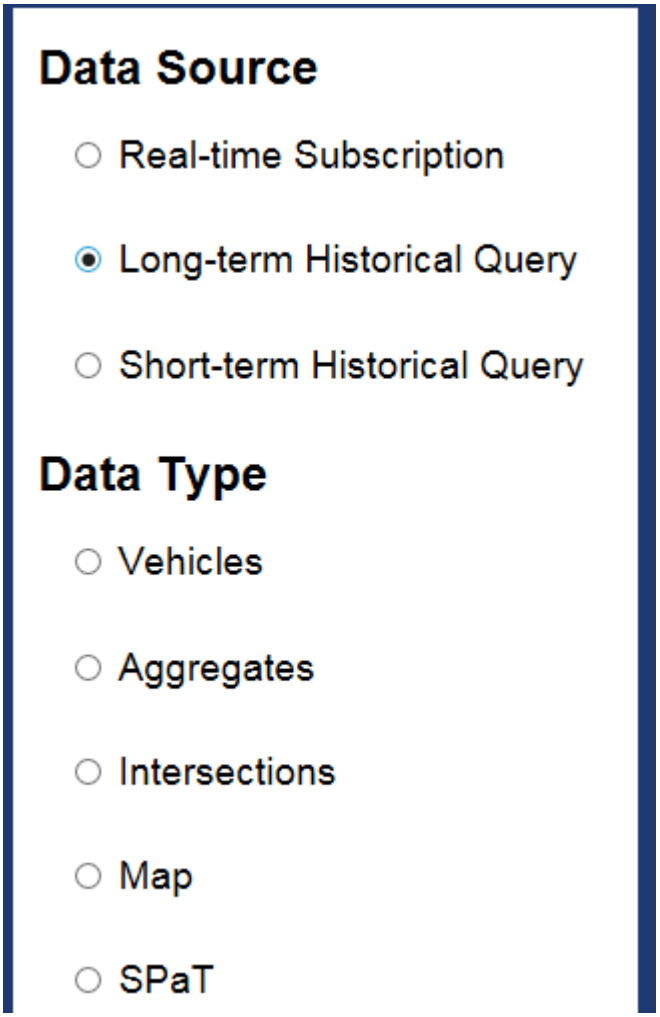
Querying historical data for all data types is very similar to subscribing to data. The only difference is the availability of several new request parameters, namely: Skip, Limit, Start Date-Time, and End Date-Time.

To query historical:

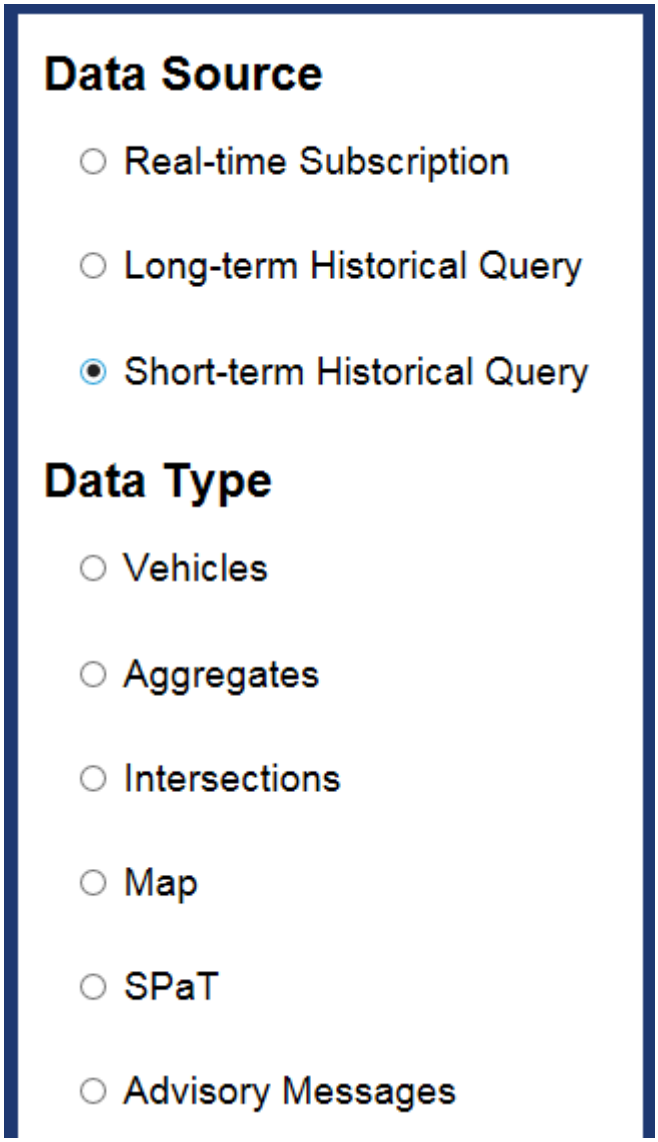
1. Select Data Source, Long-Term or Short-Term. Long-Term database retains data for several months, typically 6 months. Short-term database retains data for only a few minutes, typically 30 minutes.



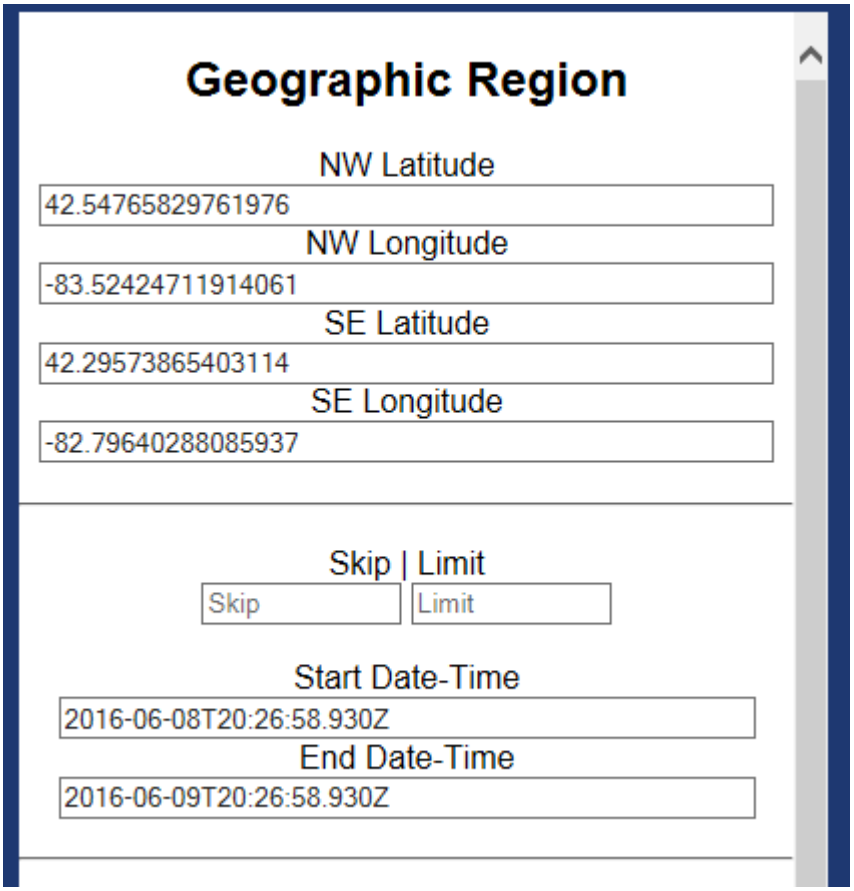
2. Select data type mush the same as subscriptions.



Note that Advisory messages are only available in the Short-term data base.



3. Selecting the Data Type makes the request parameters available. Query request parameters are same as subscription request parameters plus the additional Skip, Limit, Start Date-Time, and End Date-Time parameters.



Skip: Skip specifies the number of records that should be skipped from the start of the query for the given time period.

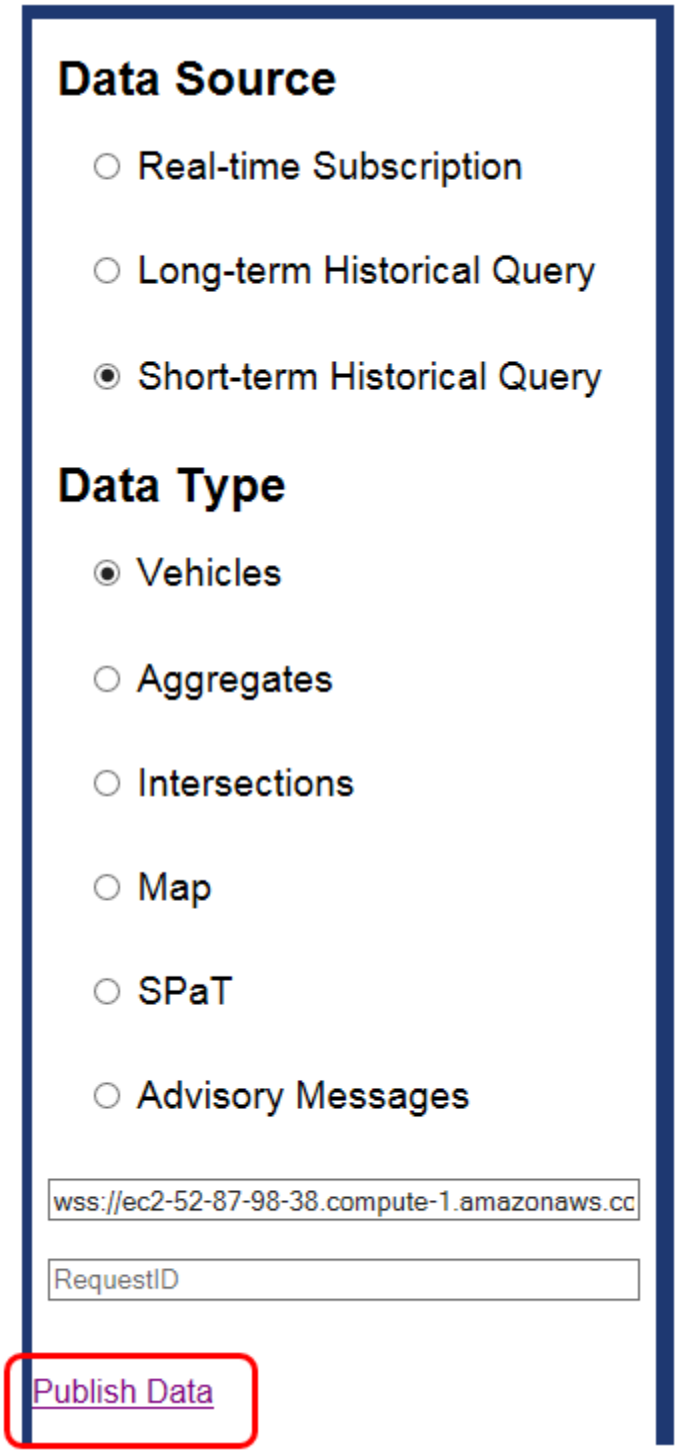
Limit: Limit specifies the maximum number of records that you would like to receive.

Start Date-Time: Specify in ISO format the beginning date and time for the query. Data **before** the specified date and time will **not** be returned.

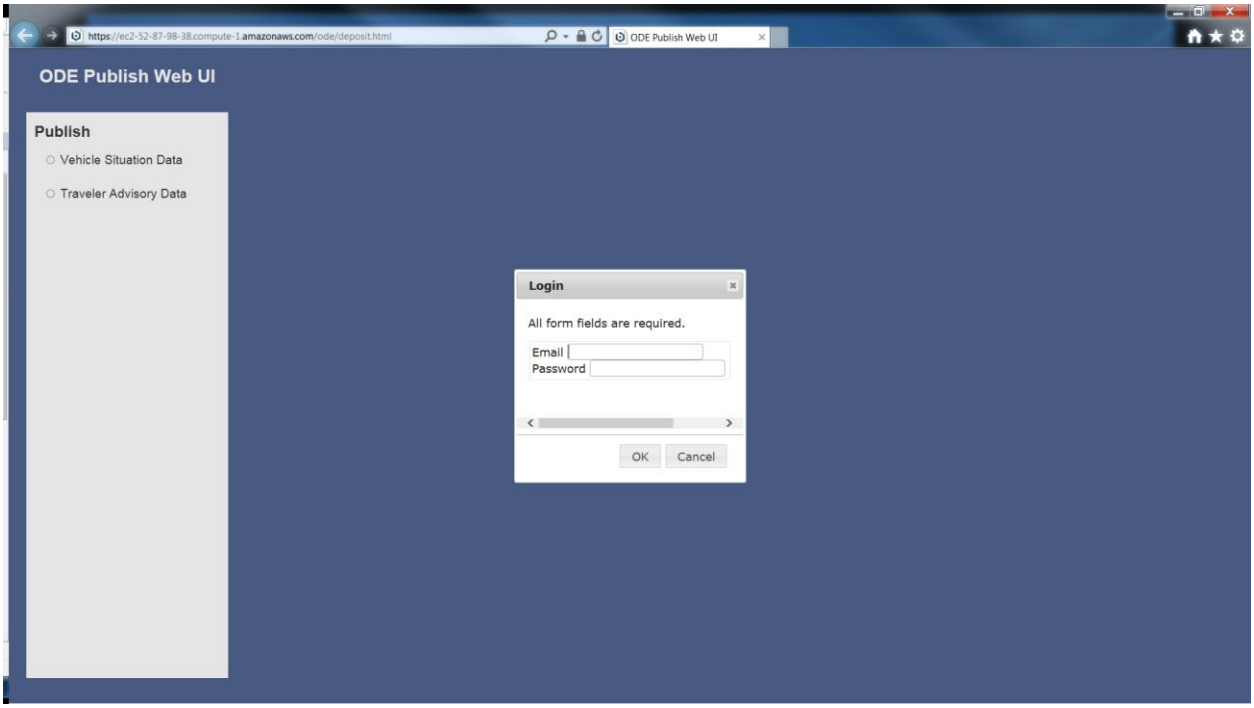
End Date-Time: Specify in ISO format the end date and time for the query. Data **after** the specified end date and time will **not** be returned.

4.6 Publishing Data

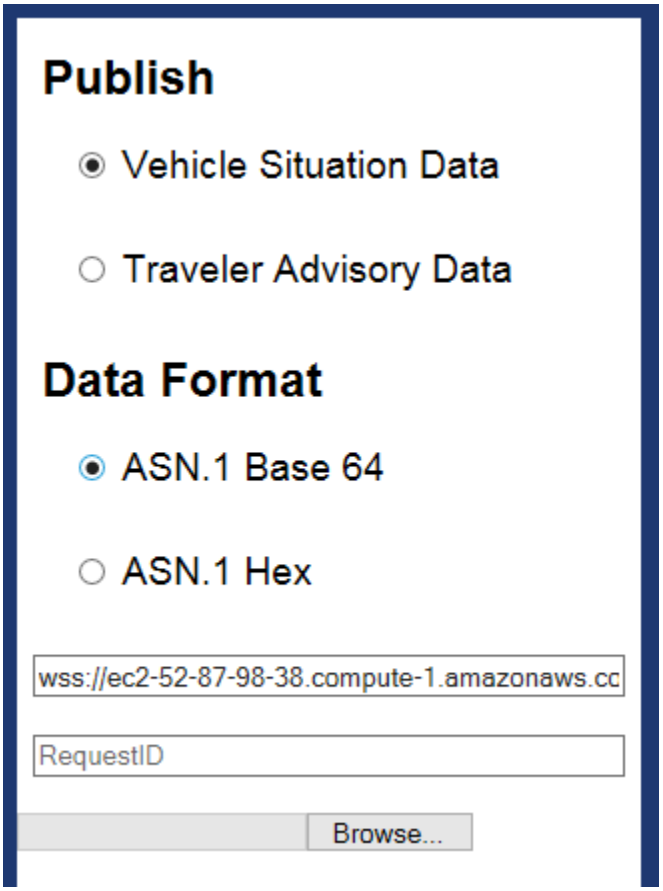
1. To publish data, click on the Publish Data link.



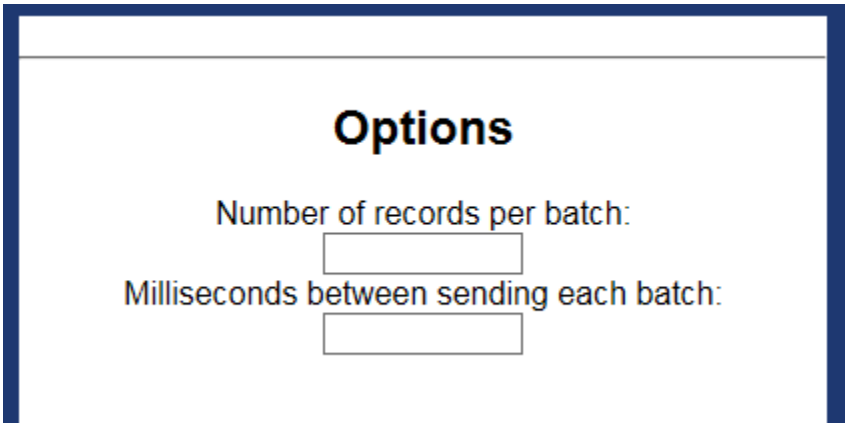
The Publish Data page will be opened in a new tab.



2. As usualy, log in with your credentials.
3. Select Type of data you would like ot publish.
4. Select the format of the data to be published. Currently only ASN.1 format is supported.



5. Click on the Browse button and select a file that contains the type of records selected in the previous step.
6. Use the Open dialog to navigate to the folder on your system that contains the file that contains the data to be published.
7. Press Open button to select the desired file.
8. If the file contains only a few records and you would like to publish all the records as fast as possible, procesd with establishing a connection and sending a request jus as you would with a subscription.
9. If the file is too large or for whatever reason you would like to publish the records at a specific rate, select the rate of publishing the records using the Options fields.



The rate options send a batch of records at certain fixed intervals.

Number of records per batch: This parameter specifies how many records to be published in each batch.
Milliseconds between sending each batch: This parameter specifies the time interval between batches.