

**Oracle® Transportation and Global
Trade Management Cloud**

REST API Getting Started Guide

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Oracle® Transportation and Global Trade Management Cloud REST API Getting Started Guide, Release 18

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Preface

Oracle Logistics Cloud provides multiple public REST APIs that can be used to access data stored in Logistics Cloud and construct integrations to other systems.

Change History

Date	Document Revision	Summary of Changes
07/2018	-01	Initial updates for Release 18.

1. Quick Start

Set up your environment and create your first object using the REST API by performing the following tasks.

Prerequisites

Table 1-1: Prerequisites

Prerequisite	More Information
Have an OTM instance, either on-premise or on the Oracle Cloud.	Sign up to use Logistics Cloud.
Configure security endpoints	You must configure security endpoints for any users.

About OTM REST Service

OTM REST service intends to provide lightweight-data communications API between clients and OTM.

Different from traditional web-page based data operations, OTM REST service accepts and generates data formatted in JSON. To data operations, OTM REST service enables clients to retrieve a resource with various options for the specific data they want to see as well as the amount of data they want returned. In the future, OTM REST will also support create, edit and delete of resources ('CRUD'). It will also and the following capabilities: -

- Perform processing on resources beyond the simple CRUD actions.
- Ad-hoc and advanced query capability to limit selection based on resource attribute values.
- Additional links to resource metadata (Open API formerly known as Swagger).

Each resource will be located by a unique URI, which is explained in the URI Format section. For security reason, you should follow the OTM REST Authentication and Authorization instructions to safely access and operate on data.

This version of the API, when complete, will replace the version of the API made available in OTM version 6.4.1. The older API was only capable of retrieving an entire single resource by primary key. The new API also adds the following capabilities:

- Retrieve collections of resources and paging through the collection.
- Ordering of collections.
- Narrowing of selection by execution of an existing Saved Query (and extended query capability in future as described above).
- Retrieval of partial resources e.g. limited to reference numbers for a specific line of a specific order release.
- Use of URL links to sub-resources rather than always retrieve the entire resource.
- Expand selected sub-resources.
- Limit selection to certain attributes of the resource rather than all attributes.

How to Access OTM REST

Here are typical ways to access OTM REST service:

- **Browser Address Bar:** You can send a GET request to the OTM REST server by putting the URI into the browser address bar. This approach may trigger a popup window for authentication information, and will display the response data onto the screen. For the most part, only GET methods will work for this approach.
- **curl:** You can use curl (terminal command tool/library) to access the OTM REST service. Currently, curl supports all GET (get) operations. For information about downloading and installing curl, see <http://curl.haxx.se/download.html> . You must install a version of curl that supports SSL.
- **CORS:** You can use JavaScript code that runs on browsers to access OTM REST service. Currently, CORS supports GET (get) operations with particular CORS settings.
- **Programming Languages:** You can use programming language, such as JAVA, to access OTM REST service. Currently, most popular programming languages supports GET (get) operations.

2. URI Format

URI stands for Uniform Resource Identifier. There are two ways to invoke the API.

When using Logistics Cloud, the first is protected by a SSO server.

```
http://host/logisticsRestApi/resources/{version}/{resourceName}
```

The second is not protected by the SSO server and requires a staged integration user.

```
http://host/logisticsRestApi/resources-int/{version}/{resourceName}
```

Where `{version}` is the target version of the REST API and `{resourceName}` is the lower case, plural value of a valid OTM resource. For example:

```
http://host/logisticsRestApi/resources/v2/locations
```

The current version of the API is 'v2'.

To see the supported versions for a specific OTM instance invoke a GET operation for the following URL:

```
http://host/logisticsRestApi/resources
```

The `{resourceName}` path element will normally correspond to the plural name of the corresponding business object in the user interface, with multi-word names using 'camel case'. For example, `orderReleases`, `shipments`, `locations` are all valid resource names.

When issuing a GET request you can identify a specific resource by sending the ID parameter (normally the GID) as part of the path of the URI. For example to GET information about the PUBLIC PHL location, you can issue:

```
http://host/logisticsRestApi/resources/v2/locations/PHL.
```

Get

Use this method to retrieve data for an entity or to retrieve a list of entities. If the GID of the entity is provided on the URI, then this API will return a response for that object. Otherwise, a list of related entities will be returned.

Put

Will be supported in a future version.

Post

Will be supported in a future version.

Delete

Will be supported in a future version.

3. Resources

The following resources are supported in the current version.

Resource Name	OTM Business Object Name
appointments	Appointment
bills	Bill
damageClaims	Claim
consols	Consol
contacts	Contact
tradeParties	Contact
corporations	Corporation
drivers	Driver
powerUnits	PowerUnit
equipments	Equipment
equipmentGroups	EquipmentGroup
equipmentTypes	EquipmentType
customsDeclarations	GtmShipment
tradeTransactions	GtmTransaction
tradeLicenses	GtmLicense
invoices	Invoice
packagedItems	PackagedItem
items	Item
itineraries	Itinerary
locations	Location
orderReleases	Order
orderReleaselines	OrLine
orderBases	OrderBase
orderMovements	OrderMovement

Resource Name	OTM Business Object Name
quotes	Quote
serviceProviders	ServiceProvider
shipments	Shipment
sellShipments	SellSideShipment
vouchers	Voucher
voyages	Voyage
workInvoices	WorkInvoice

4. Authentication

Authentication is run through HTTP authentication or through an SSO server.

HTTP Basic Authentication

The REST API is protected by HTTP Basic Authentication, which sends the User ID and Password in the HTTP header as a Base 64 encoded string. Therefore, since these credentials are not securely encrypted it is highly recommend that all communication is protected by HTTPS.

SSO Environment

The /logisticsRestApi/resources URI is protected by the SSO server. In this case access to the REST API should originate from the browser. This can be accomplished by creating a rich JavaScript application. Calls to the rest API can be made in the user's context when protected by an SSO server. This requires Cross Origin Resource Sharing (CORS) to be set up on the OTM server.

The /logisticsRestApi/resources-int URI is not protected by the SSO server. This URI requires the HTTP basic authentication authorization header. It also requires a staged integration user in OTM. The header you create is the Base64 encoded user name and password of the staged integration user.

5. Authorization

Individual REST APIs are protected by access control lists (ACL). Each API is associated with two ACLs: View and Edit. Users must be granted access to the ACLs before the APIs can be used. For more information on configuring ACLs, see the Security Guide in [My Oracle Support Document 796594.1: Version 6.x Documentation and Training Resources](#).

For additional details such as specific roles to access a REST resource, refer to the following guides:

- Oracle Fusion Applications Understanding Security - http://docs.oracle.com/cd/E51367_01/common_op/OASCP/toc.htm
- Oracle Applications Cloud Security Reference for Common Features - http://docs.oracle.com/cd/E51367_01/common_op/OACSM/toc.htm

Enabling CORS Service

Due to the Same-Origin Policy (https://en.wikipedia.org/wiki/Same-origin_policy), web browsers prevent JavaScript code from making requests against a different origin. For example, JavaScript code in origin <http://foo.A.com/> could not ask service from <http://foo.B.com/>, or even <https://foo.A.com/> with normal request settings. Cross-Origin Resource Sharing (CORS) (<https://www.w3.org/TR/cors/>) is a technique that allows this type of communication. To enable CORS service, new settings are required on both server side and client side.

Server Setting

In order to enable CORS, server requires the following property to be set to the domain that will accept these requests.

- **glog.webserver.cors.origins:** This property defines the valid origin domains of clients that are accepted by the server. If there are multiple valid origin domains, please use "," to separate them. For example, "glog.webserver.cors.origins = <http://localhost:port>,<https://localhost:port>"

Client Setting

In order to distinguish CORS requests from normal REST requests, the client should contain the following headers.

- **CORS:** Server executes CORS actions only when it detects the header "CORS" in the request and the value of this header is true.
- **withCredentials:** Server requires and accepts cookie, so "withCredentials" should be set to true in the CORS request.
- **Authorization (For non-SSO server):** Non-SSO server requires basic http authentication. Username and password should be encoded as the value of "Authorization" as one of the request headers.

JS Example at client side

```
var url =  
"http://host:port/logisticsRestApi/resources/v2/locations/GUEST.4444";  
var method = "GET";  
var xhr = createCORSRequest(method, url);  
xhr.send();
```

```

function createCORSRequest(method, url){
    var xhr = new XMLHttpRequest();

    if("withCredentials" in xhr){
        xhr.open(method, url, true);
        xhr.withCredentials = true;
        xhr.setRequestHeader("Authorization", "Basic *****");
        xhr.setRequestHeader("cors","true");
        xhr.onreadystatechange = function(){
            if(xhr.responseText !==null && xhr.responseText!== ""){
                document.getElementById("d1").innerHTML =
xhr.responseText;
            }
        };

        // for IE 9 and older, which does not support "withCredentials", and thus
        // could not send request with cookie
    }else if(typeof XDomainRequest != "undefined"){
        xhr = new XDomainRequest();
        xhr.open(method, url, true);
        xhr.setRequestHeader("Authorization", "Basic *****");
        xhr.setRequestHeader("cors","true");
        xhr.onreadystatechange = function(){
            if(xhr.responseText !==null && xhr.responseText!== ""){
                document.getElementById("d1").innerHTML =
xhr.responseText;
            }
        };
    }else{
        xhr = null;
    }

    return xhr;
}

```

6. Example - Get a list of Locations

The following example shows how to use a REST API to get a list of locations, referred to in the REST API as a Collection Resource.

Note: You must be granted the "REST - Location - View" Access Control List (ACL) to use this API.

If you want to retrieve a list of Locations, modify the following example URL, which shows the method call to generate the list:

```
curl -u <userName>:<password> [-w "%{http_code}\n"] http://host:port/  
logisticsRestApi/resources/v2/locations [-o </PATH/FileName.json>]
```

Explanation

Table 6-1: Explanation

String	Definition
<>	Required field sign. Replace its content with real data and remove the sign when you execute the command.
[]	Optional field sign. Remove the sign when you execute the command.
-u <userName>:<password>	User Credential
[-w "%{http_code}\n"]	Print status code
http://host:port/ logisticsRestApi/resources/v2/locations	URI for working Locations list
[-o </PATH/FileName.json>]	Where to store resulting JSON

Optional URL Query Parameters

The Rest API support various options to control the data that will be returned as well as the number of records.

Table 6-2: Optional URL Query Parameters

Parameter	Values
limit	The number of records to return. The default is 25. The maximum is 1000.
offset	Returns records starting at the offset value.
expand	Comma separated list of child resources to expand when loading a resource.

Parameter	Values
fields	Comma separated list of fields to limit returned properties instead of returning the entire resource.
orderBy	Comma separated list of fields to sort the results. If a descending sort is required the orderBy field should end in ":DESC". For example, locationGid:DESC.
totalResults	If present and has a value of 'true', a property will be included in the response that specifies the total number of records returned by this query.

Response

The process will respond with one of the following HTTP status codes.

Table 6-3: Response

Status Code	Values
200	HTTP 'OK'. Indicates a successful response and that there will be a JSON response message body.
400	HTTP 'BAD REQUEST'. Indicates that there was an error validating the client request. The request will have to be modified before reattempting.
401	HTTP 'UNAUTHORIZED'. Indicates the user credentials in the request are not valid.
403	HTTP 'FORBIDDEN'. Indicates that the user credentials in the request does not have authority to access the resource.
500	HTTP 'INTERNAL SERVER ERROR'. There was an unexpected error processing the request. Depending on the cause of the error the same request may be reattempted. If it continues to fail, then this will most likely need a Service Request for investigation and resolution.

The following is an example response when executing the API to retrieve a list of locations.

```
{
  "limit": 25,
  "count": 25,
  "offset": 0,
  "items": [
    {
      "locationGid": "GUEST.PD",
      "locationXid": "PD",
      "city": "BUC",
      "postalCode": "10000",
      "countryCode3Gid": "IND",
      "timeZoneGid": "Japan",
      "isTemporary": false,
      ...etc...
    }
  ]
}
```

The “items” array will contain an object for each location returned in the collection.

In addition to the location data within the “items” array the JSON message will include metadata about the response. This metadata can include: the limit, count of records returned, total number of matching results and offset within the total results. There will also be a “links” array at the bottom with properties indicating the URI to regenerate these results, as well as the URI to generate the next 25 locations.

```
    "links": [
      {
        "rel": "self",
        "href": "http://host:port/logisticsRestApi/resources/v2/locations"
      },
      {
        "rel": "next",
        "href":
"http://host:port/logisticsRestApi/resources/v2/locations?offset=25"
      }
    ]
  }
```

A complete example JSON collection is in Appendix A – Location collection example JSON.

The details of each of the locations inside the items array is identical to that described in the next section for retrieving a single location resource.

7. Example - Get a Location

The following example shows how to use a REST API to get a specific location, referred to in the REST API as a Singular Resource.

Note: You must be granted the "REST - Location - View" Access Control List (ACL) to use this API.

If you want to retrieve a Location entity, modify the following example URL, which shows the method call to get a location:

```
curl -u <userName>:<password> [-w "%{http_code}\n"] http://host:port/  
logisticsRestApi/resources/v2/locations/<LOCATION_GID> [-o  
</PATH/FileName.json>]
```

Explanation

Table 7-1: Explanation

String	Definition
<>	Required field sign. Replace its content with real data and remove the sign when you execute the command.
[]	Optional field sign. Remove the sign when you execute the command.
-u <userName>:<password>	User Credential
[-w "%{http_code}\n"]	Print status code
http://host:port/ logisticsRestApi/resources/v2/locations/<LOCATION_GID>	URI for working with Location entity with location GID of 'LOCATION_GID'
[-o </PATH/FileName.json>]	Where to store resulting JSON

Optional URL Query Parameters

The following options can be used to control the data being returned by the Rest API.

Table 7-2: Optional URL Query Parameters

Parameter	Values
expand	Comma separated list of child resources to expand when loading a resource.

Parameter	Values
fields	Comma separated list of fields to return, instead of returning the entire resource.

Response

The process will respond with one of the following status codes.

Table 7-3: Response

Status Code	Values
200	HTTP 'OK'. Indicates a successful response and that there will be a JSON response message body.
400	HTTP 'BAD REQUEST'. Indicates that there was an error validating the client request. The request will have to be modified before reattempting.
401	HTTP 'UNAUTHORIZED'. Indicates the user credentials in the request are not valid.
403	HTTP 'FORBIDDEN'. Indicates that the user credentials in the request does not have authority to access the resource.
404	HTTP 'NOT FOUND'. The requested resource was not found on the server.
500	HTTP 'INTERNAL SERVER ERROR'. There was an unexpected error processing the request. Depending on the cause of the error the same request may be reattempted. If it continues to fail, then this will most likely need a Service Request for investigation and resolution.

The JSON response by default includes all of the attributes related to Location as well as the child relationships. These child relationships include, for example, Location Role Profile, Location Reference Number, etc. Since Location has a 1-to-many relationship with the child relations, the children are represented by arrays in the resulting JSON.

For example, a GET on the URL `http://host:port/logisticsRestApi/resources/v2/locations/GUEST.PD` would return the following example JSON:

```
{
  "locationGid": "GUEST.PD",
  "locationXid": "PD",
  "city": "BUC",
  "postalCode": "10000",
  "countryCode3Gid": "IND",
  "timeZoneGid": "Japan",
  ...etc...
  "addressUpdateDate": {
    "value": "2018-04-26T09:44:42-07:00"
  },
  "updateDate": {
    "value": "2018-04-26T09:44:42-07:00"
  }
}
```



```

    },
    "addresses": {
      "links": [
        {
          "rel": "self",
          "href":
"http://host:port/logisticsRestApi/resources/v2/locations/GUEST.PD/addresses"
        }
      ]
    },
    "refnums": {
      "links": [
        {
          "rel": "self",
          "href":
"http://host:port/logisticsRestApi/resources/v2/locations/GUEST.PD/refnums"
        }
      ]
    },
    "statuses": {
      "links": [
        {
          "rel": "self",
          "href":
"http://host:port/logisticsRestApi/resources/v2/locations/GUEST.PD/statuses"
        }
      ]
    },
    "links": [
      {
        "rel": "self",
        "href":
"http://host:port/logisticsRestApi/resources/v2/locations/GUEST.PD"
      }
    ]
  }
}

```

The resulting JSON contains the top level properties of the location such as the GID/XID, city, province code, postal code, etc. It also contains properties for child resources with links to navigate to these child records. For example status, role profile, and contacts. Child resource properties can also be populated with data by passing the “expand” parameter on the query string. For example, to have statuses populated the URI would look like:

```

https://host:port/logisticsRestApi/resources/v2/locations/GUEST.PD?expand=statuses

```

The expand parameter takes a comma separated list of values so multiple child resources can be expanded.

8. Example – Running Saved Query

The following example shows how to use the REST API to run a saved query and return a list of Locations.

Note: As with the other examples in this guide, the Access Control List related to the resource must be granted. For example, this example uses the "locations" resource and so the "REST - Location - View" ACL must be granted

If you want to retrieve a list of Locations based on a saved query, modify the following example URI, which shows the method call to generate the list based on a saved query:

```
curl -u <userName>:<password> [-w "%{http_code}\n"] http://host:port/  
logisticsRestApi/resources/v2/custom-  
actions/savedQueries/locations/<SAVED_QUERY_GID> [-o </PATH/FileName.json>]
```

The SAVED_QUERY_GID represents a UI saved query. This UI saved query can be either "User in Finder" or can be based on SQL. If a SQL based saved query contains an "order by" clause it will be overridden by an orderBy passed on the URI. Integration saved queries are not supported.

Explanation

Table 8-1: Explanation

String	Definition
<>	Required field sign. Replace its content with real data and remove the sign when you execute the command.
[]	Optional field sign. Remove the sign when you execute the command.
-u <userName>:<password>	User Credential
[-w "%{http_code}\n"]	Print status code
logisticsRestApi/resources/v2/custom-actions/savedQueries/locations/<SAVED_QUERY_GID>	URI invoking a saved query for locations. SAVED_QUERY_GID must a valid UI Saved Query.
[-o </PATH/FileName.json>]	Where to store resulting JSON

Optional URL Query Parameters

The Rest API support various options to control the data that will be returned as well as the number of records.

Table 8-2: Optional URL Query Parameters

Parameter	Values
limit	The number of records to return. The default is 25. The maximum is 1000..
offset	Returns records starting at the offset value.
expand	Comma separated list of child resources to expand when loading an entity.
fields	Comma separated list of fields to return instead of returning the entire entity.
orderBy	Comma separated list of fields to sort the results. If a descending sort is required the orderBy field should end in :DESC. For example, locationGid:DESC. Any order by specified in the saved query will be ignored whether this is specified or not.
totalResults	Included a property that specifies the total number of records returned by this saved query.

Response

The process will respond in exactly the same way as when retrieving a list of resources. If the saved query record does not exist or the user does not have access to it the user will receive a 404 response. If a SQL based saved query contains invalid SQL the user will receive a 500 response. If a saved query is being invoked for the wrong entity on the URI, for example passing a saved query for Shipment to the .../custom-actions/savedQueries/Location URI, the user will receive a 400 error indicating a Bad Request.

The response payload for running Saved Queries is the same as generating a list. Please refer to that section for an example of the JSON response.

9. Example - Create a Location

This functionality will be provided in a future release.

10. Example - Update a Location

This functionality will be provided in a future release.

11. Example - Delete a Location

This functionality will be provided in a future release.

12. Appendix A – Location collection example JSON

```
{
  "limit": 25,
  "count": 25,
  "offset": 0,
  "items": [{
    "locationGid": "GUEST.SERVPROV-5_413-426",
    "locationXid": "SERVPROV-5_413-426",
    "locationName": "SERVPROV-5_413-426",
    "city": "WAYNE",
    "provinceCode": "PA",
    "postalCode": "19087",
    "countryCode3Gid": "USA",
    "timeZoneGid": "America/New_York",
    "lat": 40.03657,
    "lon": -75.38013,
    "regionGid": "413-426",
    "isTemporary": false,
    "isMakeApptBeforePlan": false,
    "isShipperKnown": true,
    "isAddressValid": "Y",
    "isLtlSplittable": true,
    "useAppointmentPriority": false,
    "scheduleLowPriorityAppoint": false,
    "enforceTimeWindowAppoint": false,
    "scheduleInfeasibleAppoint": false,
    "bbIsNewStore": false,
    "excludeFromRouteExecution": false,
    "isTemplate": false,
    "allowDriverRest": false,
    "apptObjectType": "S",
    "isFixedAddress": false,
    "primaryAddressLineSeq": 1,
    "domainName": "GUEST",
    "isActive": true,
    "addressUpdateDate": {
      "value": "2013-08-13T07:14:33-07:00"
    },
    "updateDate": {
      "value": "2014-02-12T23:27:57-08:00"
    },
    "addresses": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-5\_413-426/addresses"
      }]
    },
    "statuses": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-5\_413-426/statuses"
      }]
    }
  ]
},
```

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    "roleProfiles": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-426/roleProfiles"
      }]
    },
    "contacts": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-426/contacts"
      }]
    },
    "links": [{
      "rel": "self",
      "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-426"
    }]
  }, {
    "locationGid": "GUEST.SERVPROV-5_413-427",
    "locationXid": "SERVPROV-5_413-427",
    "locationName": "SERVPROV-5_413-427",
    "city": "WAYNE",
    "provinceCode": "PA",
    "postalCode": "19087",
    "countryCode3Gid": "USA",
    "timeZoneGid": "America/New_York",
    "lat": 40.03657,
    "lon": -75.38013,
    "regionGid": "413-427",
    "isTemporary": false,
    "isMakeApptBeforePlan": false,
    "isShipperKnown": true,
    "isAddressValid": "Y",
    "isLtlSplittable": true,
    "useAppointmentPriority": false,
    "scheduleLowPriorityAppoint": false,
    "enforceTimeWindowAppoint": false,
    "scheduleInfeasibleAppoint": false,
    "bbIsNewStore": false,
    "excludeFromRouteExecution": false,
    "isTemplate": false,
    "allowDriverRest": false,
    "apptObjectType": "S",
    "isFixedAddress": false,
    "primaryAddressLineSeq": 1,
    "domainName": "GUEST",
    "isActive": true,
    "addressUpdateDate": {
      "value": "2013-08-13T07:14:33-07:00"
    },
    "updateDate": {
      "value": "2014-02-12T23:27:57-08:00"
    }
  },

```

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    "addresses": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-427/addresses"
      }]
    },
    "statuses": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-427/statuses"
      }]
    },
    "roleProfiles": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-427/roleProfiles"
      }]
    },
    "contacts": {
      "links": [{
        "rel": "self",
        "href":
"https://host:port/logisticsRestApi/resources/v2/locations//GUEST.SERVPROV-
5_413-427/contacts"
      }]
    },
    "links": [{
      "rel": "self",
      "href": "https://host:port/logisticsRestApi/resources/v2/locations/"
    }, {
      "rel": "next",
      "href":
"https://host:port/logisticsRestApi/resources/v2/locations/?offset=25"
    }]
  }
}

```

