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July 1, 2019
## Document History

<table>
<thead>
<tr>
<th>Description</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Draft - addressed reorganization comments</td>
<td>0.9</td>
<td>08/28/13</td>
</tr>
<tr>
<td>First published version with transit, traffic, tolling, and parking APIs</td>
<td>1.0</td>
<td>09/13/13</td>
</tr>
<tr>
<td>Update Traffic APIs’ structure information, parameters and filters, and their examples to sync with specification provided on Open511.org.</td>
<td>1.0</td>
<td>5/2/2014</td>
</tr>
<tr>
<td>Add GTFS-realtime Trip Updates and Vehicle Positions, and their examples.</td>
<td>1.0</td>
<td>5/7/2014</td>
</tr>
<tr>
<td>Minor updates and corrections</td>
<td>1.0</td>
<td>5/28/2014</td>
</tr>
<tr>
<td>Add sample request endpoint and parameters and filters tables for Section 3.14 and 3.15. Update references for resource endpoints with their exact URL.</td>
<td>1.0</td>
<td>6/12/2014</td>
</tr>
<tr>
<td>Minor updates to Section 3.14 and 3.15</td>
<td>1.0</td>
<td>7/17/2014</td>
</tr>
<tr>
<td>Separated Traffic and Transit</td>
<td>1.0</td>
<td>8/26/2014</td>
</tr>
<tr>
<td>Minor updates to remove references for Traffic</td>
<td>1.0</td>
<td>9/24/2014</td>
</tr>
<tr>
<td>Updated request endpoint URLs for all APIs</td>
<td>1.0</td>
<td>04/06/2016</td>
</tr>
<tr>
<td>Added two new APIs: GTFS Operators List and GTFS Dataset Download. Added sample message response to Section A.1 and B.1</td>
<td>1.0</td>
<td>04/06/2016</td>
</tr>
<tr>
<td>Added missing OperatorRef parameter for Transit Scheduled Departure for a Stop</td>
<td>1.0</td>
<td>04/06/2016</td>
</tr>
<tr>
<td>Marked following two APIs are “Possible Future Implementation”</td>
<td>1.0</td>
<td>04/06/2016</td>
</tr>
<tr>
<td>o Transit Addition and Cancellation of Trips by Agency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Transit Schedule Updates for an agency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Updated JSON output (Section B.1.7) for Holiday API</td>
<td>1.0</td>
<td>04/06/2016</td>
</tr>
<tr>
<td>Added ServiceAlerts API</td>
<td>1.1</td>
<td>06/10/2016</td>
</tr>
<tr>
<td>Updates to Pattern, Timetable and Holiday APIs</td>
<td>1.2</td>
<td>11/08/2016</td>
</tr>
<tr>
<td>o Included Stop Names in Pattern API</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Added parameter to Timetable API for returning timetables for Special services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Updated Holiday API to align with GTFS Service Exceptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Description</td>
<td>Version</td>
<td>Date</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>Add Offset parameter in Timetable API</td>
<td>1.21</td>
<td>03/07/2017</td>
</tr>
<tr>
<td>Add element VehicleJourneyName in Stop Timetable API</td>
<td>1.22</td>
<td>05/22/2017</td>
</tr>
<tr>
<td>Updated examples to use the two character Agency ID</td>
<td>1.23</td>
<td>08/14/2017</td>
</tr>
<tr>
<td>Added GTFS+ files in GTFS Data Feed download API and added appendix for GTFS+ files definition</td>
<td>1.24</td>
<td>09/11/2017</td>
</tr>
<tr>
<td>Standardized GTFS Operator API response</td>
<td>1.25</td>
<td>10/02/2017</td>
</tr>
<tr>
<td>Added ExceptionDate parameter to Timetable API</td>
<td>1.26</td>
<td>05/30/2018</td>
</tr>
<tr>
<td>Removed daytypes section from Holiday API</td>
<td>1.27</td>
<td>07/01/2019</td>
</tr>
</tbody>
</table>
1 Overview

This document focuses on data exchange APIs for the Parking data. For a complete overview of 511 Data Exchange, please refer to Open 511 Data Exchange Specifications – Overview document. The overview document covers:

- General information about 511 Data Exchange
- Different protocols and data feeds available through Open 511 APIs
- Standard Discovery API specifications.
- Encodings and Protocols along with reference to standard documentation.
- Technical Guidelines

It is highly recommended that all users of Open 511 Data Exchange have reviewed the information in the Overview document.
2 Transit APIs

The NeTEx data structures wrapped within the SIRI framework has been adopted for dynamic exchange of Transit service configuration and schedules. Open511 however recommends using HTTP Get method for requests instead of using HTTP Post, as specified by the NeTEx/SIRI standards.

The data communication architecture for San Francisco Bay Area 511 is depicted in Figure 1 below.

![Figure 1 – Transit data communication architecture for San Francisco Bay Area 511](image-url)
All NeTEx responses shall be enclosed within the SIRI ServiceDelivery structure as shown below.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Time response was created</td>
</tr>
<tr>
<td>DataObjectDelivery</td>
<td>DataObjects Delivery structure</td>
<td>Mandatory</td>
<td>Delivery for NeTEx service containing one or more NeTEx data objects</td>
</tr>
<tr>
<td>— ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Time individual response element was created</td>
</tr>
<tr>
<td>— dataObjects</td>
<td>Collection of NeTEx dataobjects</td>
<td>Mandatory</td>
<td>NeTEx Entities of any type</td>
</tr>
</tbody>
</table>

2.1 API: Operator

Operator within a jurisdiction represents a company providing public transport services. Consumers can request a list of all the operators within the jurisdiction or they can use additional filters such as operator code/id to restrict the results as per their needs and use case.

Below is a message structure of dataObjects for Organisations contained within a NeTEx ResourceFrame. Organisations are a collection of the Operator resource.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResourceFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for Organizations.</td>
</tr>
<tr>
<td>—organisations</td>
<td>Collection of Operators</td>
<td>Mandatory</td>
<td>A collection of Operator elements. Can contain multiple operator elements, at least one occurrence is mandatory.</td>
</tr>
</tbody>
</table>

**Operator structure**

The operator structure is the main element of the organizations collection. It represents a company providing public transport services.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the operator</td>
</tr>
<tr>
<td>Extensions</td>
<td>Container</td>
<td>Optional</td>
<td>Container for extensions to NeTEx</td>
</tr>
<tr>
<td>—Monitored</td>
<td>Boolean</td>
<td>Optional</td>
<td>Whether agency is real-time enabled or not</td>
</tr>
<tr>
<td>—OtherModes</td>
<td>Enum list</td>
<td>Optional</td>
<td>List of transport modes other than primary mode.</td>
</tr>
<tr>
<td>—Coverage</td>
<td>Container</td>
<td>Optional</td>
<td>Coverage area of the operator – can be a polygon or a list of lines</td>
</tr>
<tr>
<td>—gml:Polygon</td>
<td>GML structure</td>
<td>Optional</td>
<td>GML Polygon representing the coverage</td>
</tr>
<tr>
<td>—gml:LineString</td>
<td>GML structure</td>
<td>Optional</td>
<td>GML Line representing the coverage. Multiple lines can be provided</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Optional</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PrivateCode</td>
<td>Free Text</td>
<td>Optional</td>
<td>Agency/operator code used within the jurisdiction</td>
</tr>
<tr>
<td>SiriOperatorRef</td>
<td>Free Text</td>
<td>Optional</td>
<td>An alternative code that uniquely identifies the operator in real-time systems (AVMS)</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the operator.</td>
</tr>
<tr>
<td>ShortName</td>
<td>Free Text</td>
<td>Optional</td>
<td>Short name for the operator.</td>
</tr>
<tr>
<td>Locale</td>
<td>Container</td>
<td>Optional</td>
<td>Container for the operator’s locale information</td>
</tr>
<tr>
<td>—TimeZone</td>
<td>Free Text</td>
<td>Optional</td>
<td>Timezone Name</td>
</tr>
<tr>
<td>—DefaultLanguage</td>
<td>Xsd:Language</td>
<td>Optional</td>
<td>Default Language</td>
</tr>
<tr>
<td>ContactDetails</td>
<td>Container</td>
<td>Optional</td>
<td>Container for operator’s contact information</td>
</tr>
<tr>
<td>—ContactPhoneNumber</td>
<td>Free Text</td>
<td>Optional</td>
<td>Contact telephone number</td>
</tr>
<tr>
<td>—Website</td>
<td>Xsd:AnyURI</td>
<td>Optional</td>
<td>Website address</td>
</tr>
<tr>
<td>PrimaryMode</td>
<td>Enum</td>
<td>Optional</td>
<td>Primary transport mode of operator</td>
</tr>
</tbody>
</table>

*Sample request endpoint for operators*

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request EndPoint Example</td>
<td>For e.g. <a href="http://api.511.org/transit/operators?api_key=%7Byour-key%7D">http://api.511.org/transit/operators?api_key={your-key}</a></td>
</tr>
</tbody>
</table>
Parameters and Filters

Parameters and filters supported with the request are shown in the table below. The transit operator response for XML is shown in Appendix A Section A.1.1. The transit operator response for JSON is shown in Appendix B Section B.1.1.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>accept_language</td>
<td>Optional</td>
<td>If multiple languages are supported, this can be used to request data in desired language. If the jurisdiction doesn’t support the response in requested language, response could be in default language selected by jurisdiction.</td>
</tr>
<tr>
<td>Operator_id</td>
<td>Optional</td>
<td>The operator_id parameter supports filtering based on a particular operator id/code</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual Operator resource cannot be located). For e.g. http://api.511.org/transit/Operators?operator_id=1345&api_key={your-key}&format=json

2.2 API: Line

Lines are routes covered by transit operators within the jurisdiction. Consumers can request list of all the routes within an operator or they can use additional filters like line id to restrict the results as per their needs and use case.

Below is a message structure of dataObjects for lines contained within a NeTEx ServiceFrame. Lines are a collection of the Line (Route) resource.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for Lines.</td>
</tr>
<tr>
<td>— lines</td>
<td>Collection of Lines</td>
<td>Mandatory</td>
<td>A collection of Line elements. Can contain multiple line elements, at least one occurrence is mandatory.</td>
</tr>
</tbody>
</table>

Line structure
The line structure is the main element of the Lines collection. It represents a route generally known to the public by a name or a number.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the route.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Name of the line.</td>
</tr>
<tr>
<td>TransportMode</td>
<td>Enum</td>
<td>Optional</td>
<td>Mode of transport of line</td>
</tr>
<tr>
<td>PublicCode</td>
<td>Free Text</td>
<td>Optional</td>
<td>Public identifier of the line</td>
</tr>
<tr>
<td>SiriLineRef</td>
<td>Free Text</td>
<td>Optional</td>
<td>An alternative code that uniquely identifies the operator in real-time systems (AVMS)</td>
</tr>
<tr>
<td>OperatorRef</td>
<td>ID</td>
<td>Mandatory</td>
<td>Reference to the operator for the line</td>
</tr>
<tr>
<td>Monitored</td>
<td>Boolean</td>
<td>Optional</td>
<td>Indicates if real-time data available for line.</td>
</tr>
</tbody>
</table>

**Sample request endpoint for lines**

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request EndPoint Example</td>
<td>For e.g. <a href="http://api.511.org/transit/lines?api_key=%7Byour-key%7D&amp;operator_id=AC">http://api.511.org/transit/lines?api_key={your-key}&amp;operator_id=AC</a></td>
</tr>
</tbody>
</table>

**Parameters and Filters**

Parameters and Filters supported with the request are shown in the table below. The transit line response for XML is shown in Appendix A Section A.1.2. The transit line response for JSON is shown in Appendix B Section B.1.2.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>accept_language</td>
<td>Optional</td>
<td>If multiple languages are supported, this can be used to request data in desired language. If the jurisdiction doesn’t support the response in requested language, response could be in default language selected by jurisdiction.</td>
</tr>
<tr>
<td>Operator_id</td>
<td>Mandatory</td>
<td>The operator_id parameter limits the search for lines within a particular operator id/code</td>
</tr>
<tr>
<td>Line_id</td>
<td>Optional</td>
<td>The line_id parameter supports filtering based on a particular line</td>
</tr>
</tbody>
</table>
Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- **500 - Internal Server Error** (System has issues processing your request)
- **401 – Unauthorized** (Invalid API key)
- **404 – Not found** (If an individual line resource cannot be located). For e.g. `http://api.511.org/transit/lines?api_key={your-key}&operator_id=1345`

### 2.3 API: Stop

Stop or ScheduledStopPoint is a location where passengers can board or alight from vehicles. Consumers can request list of all the stops serviced by an agency/operator within the jurisdiction. Stop groupings or StopAreas are also returned when specifically requested using the include_stop_areas parameter.

Below is a message structure of dataObjects for stops contained within a NeTEx ServiceFrame. ScheduledStopPoints are a collection of the ScheduledStopPoint (Stop) resource.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for ScheduledStopPoints.</td>
</tr>
<tr>
<td>scheduledStopPoints</td>
<td>Collection of ScheduledStop Points</td>
<td>Mandatory</td>
<td>A collection of ScheduledStopPoint elements. Can contain multiple ScheduledStopPoint elements, at least one occurrence is mandatory.</td>
</tr>
<tr>
<td>stopAreas</td>
<td>Collection of Stop Areas</td>
<td>Optional</td>
<td>A collection of StopArea elements. Stop Areas group stops within an operator or across operators. A hierarchy of stop groups could also be provided. The stopAreas are returned only when specifically requested using the include_stop_areas parameter.</td>
</tr>
</tbody>
</table>

**ScheduledStopPoint structure**

The ScheduledStopPoint structure is the main element of the ScheduledStopPoints collection. It represents a location where passengers can board or alight from vehicles.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the stop.</td>
</tr>
</tbody>
</table>
StopArea structure

The StopArea structure is the main element of the stopAreas collection. It represents a grouping of stops within or across multiple operators.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the stop area.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the stop group.</td>
</tr>
<tr>
<td>Members</td>
<td>Container</td>
<td>Optional</td>
<td>Container of stops that belong to the group.</td>
</tr>
<tr>
<td>ScheduledStopPointRef</td>
<td>Reference ID</td>
<td>Optional</td>
<td>ID of the ScheduledStopPoint (within the ‘ref’ attribute)</td>
</tr>
<tr>
<td>ParentStopAreaRef</td>
<td>Reference ID</td>
<td>Optional</td>
<td>Used to build a hierarchy of stop areas. For example, MUNI stops at Embarcadero could be a StopArea 1; ferry stops at Embarcadero could be StopArea 2. Stop Area 3 could be a parent stop area which comprises of all regional transit stops at Embarcadero. Stop Area 3 is then the ParentStopArea for StopArea 1 and 2.</td>
</tr>
</tbody>
</table>

Sample request endpoint for stops

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Endpoint Example</td>
<td>For e.g. <a href="http://api.511.org/transit/stops?api_key=%7Byour-key%7D&amp;operator_id=SF">http://api.511.org/transit/stops?api_key={your-key}&amp;operator_id=SF</a></td>
</tr>
</tbody>
</table>

Parameters and Filters

Parameters and Filters supported with the request are shown in the table below. The transit stop response for XML is shown in Appendix A Section A.1.3. The transit stop response for JSON is shown in Appendix B Section B.1.3.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
</tbody>
</table>
### Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual stop resource cannot be located). For e.g. http://api.511.org/transit/stops?api_key=\{your-key\}&operator_id=1345

### 2.4 API: StopPlace

StopPlace is a named place or the physical stop where public transport may be accessed. Consumers can request list of all the stop places by operator code or they can use additional filters such as stop id to restrict the results as per their needs and use case. For a given stop, the physical representation of the stop (StopPlace) and the representation of the stop as a point in the timetable (ScheduledStopPoint) will use the same stop identifier (id).

Below is a message structure of dataObjects for lines contained within a NeTEx ServiceFrame. StopPlaces is a collection of the StopPlace resource.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiteFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for StopPlaces.</td>
</tr>
<tr>
<td>—stopPlaces</td>
<td>Collection of StopPlaces</td>
<td>Mandatory</td>
<td>A collection of stopPlace elements. Can contain multiple stopPlace elements, at least one occurrence is mandatory.</td>
</tr>
</tbody>
</table>
**StopPlace structure**

The StopPlace structure is the main element of the stopPlaces collection. It represents a physical stop where public transport may be accessed.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the StopPlace.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the StopPlace.</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of StopPlace</td>
</tr>
<tr>
<td>Centroid</td>
<td>Container</td>
<td>Optional</td>
<td>Center coordinate of the stopPlace</td>
</tr>
<tr>
<td>Location</td>
<td>Container</td>
<td>Optional</td>
<td>The position of the Point that represents the center of the stopPlace</td>
</tr>
<tr>
<td>—Longitude</td>
<td>Float</td>
<td>Optional</td>
<td>Longitude of stopPlace using WGS84 projection</td>
</tr>
<tr>
<td>—Latitude</td>
<td>Float</td>
<td>Optional</td>
<td>Latitude of stopPlace using WGS84 projection</td>
</tr>
<tr>
<td>AccessibilityAssessment</td>
<td>Container</td>
<td>Optional</td>
<td>The accessibility characteristics of the stopPlace</td>
</tr>
<tr>
<td>—MobilityImpairedAccess</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Summary indication as to whether the stopPlace is considered accessible or not</td>
</tr>
<tr>
<td>—limitations</td>
<td>Container</td>
<td>Optional</td>
<td>Accessibility limitations</td>
</tr>
<tr>
<td>—AccessibilityLimitation</td>
<td>Container</td>
<td>Mandatory</td>
<td>Assessment of the accessibility of the stopPlace</td>
</tr>
<tr>
<td>———WheelChairAccess</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Whether the stopPlace is wheelchair accessible</td>
</tr>
<tr>
<td>alternativeNames</td>
<td>Container</td>
<td>Optional</td>
<td>Container for alternative names</td>
</tr>
<tr>
<td>—AlternativeName</td>
<td>Container</td>
<td>Mandatory</td>
<td>Container for Alternative name</td>
</tr>
<tr>
<td>—Name</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Alternative Name</td>
</tr>
<tr>
<td>PostalAddress</td>
<td>Container</td>
<td>Optional</td>
<td>Postal address of the stopPlace</td>
</tr>
<tr>
<td>—AddressLine1</td>
<td>Free Text</td>
<td>Optional</td>
<td>First line of address</td>
</tr>
<tr>
<td>—Town</td>
<td>Free Text</td>
<td>Optional</td>
<td>Town</td>
</tr>
<tr>
<td>Url</td>
<td>URI</td>
<td>Optional</td>
<td>Web address of stopPlace</td>
</tr>
<tr>
<td>OperatorRef</td>
<td>Reference ID</td>
<td>Optional</td>
<td>Reference to the operator of the stopPlace (contained in ref attribute of OperatorRef element)</td>
</tr>
<tr>
<td>adjacentSites</td>
<td>Container</td>
<td>Optional</td>
<td>Reference to adjacent sites such as parking locations</td>
</tr>
<tr>
<td>—ParkingRef</td>
<td>Reference ID</td>
<td>Mandatory</td>
<td>Reference to parking associated with the stopPlace (contained in ref attribute of ParkingRef element)</td>
</tr>
<tr>
<td>placeEquipments</td>
<td>Container</td>
<td>Optional</td>
<td>Equipments that may be located in the stopPlace</td>
</tr>
<tr>
<td>—SanitaryEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Container for a sanitary facility such as a restroom, shower, etc.</td>
</tr>
<tr>
<td>——Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the facility</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Optional</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CycleStorageEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Container for cycle storage equipments</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the facility</td>
</tr>
<tr>
<td>CycleStorageType</td>
<td>Enum</td>
<td>Optional</td>
<td>Type of storage (e.g. Racks)</td>
</tr>
<tr>
<td>NumberOfSpaces</td>
<td>Integer</td>
<td>Optional</td>
<td>Number of storage spaces</td>
</tr>
<tr>
<td>SignEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Sign visible to passengers such as information boards</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the sign</td>
</tr>
<tr>
<td>EscalatorEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Escalators in the stopPlace</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the escalator</td>
</tr>
<tr>
<td>LiftEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Elevators(Lifts) in the stopPlace</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the elevator</td>
</tr>
<tr>
<td>ShelterEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Shelter equipment such as waiting areas</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of shelter</td>
</tr>
<tr>
<td>SeatingEquipment</td>
<td>Container</td>
<td>Optional</td>
<td>Seating equipment such as benches</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of seating equipment</td>
</tr>
<tr>
<td>PublicCode</td>
<td>Free Text</td>
<td>Optional</td>
<td>Short public code for passengers to use when uniquely identifying the stop</td>
</tr>
<tr>
<td>TransportMode</td>
<td>Enum</td>
<td>Optional</td>
<td>Primary mode of transport associated with the stopPlace</td>
</tr>
<tr>
<td>StopPlaceType</td>
<td>Enum</td>
<td>Optional</td>
<td>Type of stopPlace (for e.g. Rail Station)</td>
</tr>
<tr>
<td>quays</td>
<td>Container</td>
<td>Optional</td>
<td>A collection of quays</td>
</tr>
<tr>
<td>Quay</td>
<td>Container</td>
<td>Mandatory</td>
<td>A place such as platform where passengers have access to Public transport</td>
</tr>
<tr>
<td>CompassOctant</td>
<td>Enum</td>
<td>Optional</td>
<td>Heading of quay relative to street (E/W/N/S/NE/NW/SE/SW)</td>
</tr>
<tr>
<td>parkings</td>
<td>Container</td>
<td>Optional</td>
<td>A collection of parking locations linked to the stopPlace</td>
</tr>
<tr>
<td>Parking</td>
<td>Container</td>
<td>Mandatory</td>
<td>Single parking location</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of parking location</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description</td>
</tr>
<tr>
<td>Centroid</td>
<td>Container</td>
<td>Optional</td>
<td>Container for center location of Parking</td>
</tr>
<tr>
<td>Location</td>
<td>Container</td>
<td>Optional</td>
<td>Center point of Parking</td>
</tr>
<tr>
<td>Longitude</td>
<td>Float</td>
<td>Optional</td>
<td>Longitude of Parking using WGS84 projection</td>
</tr>
<tr>
<td>Latitude</td>
<td>Float</td>
<td>Optional</td>
<td>Latitude of Parking using WGS84 projection</td>
</tr>
<tr>
<td>PostalAddress</td>
<td>Container</td>
<td>Optional</td>
<td>Address of Parking</td>
</tr>
<tr>
<td>AddressLine1</td>
<td>Free Text</td>
<td>Optional</td>
<td>Address Line 1</td>
</tr>
<tr>
<td>Town</td>
<td>Free Text</td>
<td>Optional</td>
<td>Town</td>
</tr>
<tr>
<td>ParkingType</td>
<td>Enum</td>
<td>Optional</td>
<td>Parking type (for e.g. Train station parking, Park and Ride)</td>
</tr>
<tr>
<td>TotalCapacity</td>
<td>Integer</td>
<td>Optional</td>
<td>Total number of parking places</td>
</tr>
<tr>
<td>RealTimeOccupancyAvailable</td>
<td>Boolean</td>
<td>Optional</td>
<td>Whether real time occupancy data available for the parking location</td>
</tr>
</tbody>
</table>
---parkingAreas
---ParkingArea
---Description
---ParkingProperties
——ParkingUserType
——spaces
——ParkingCapacity
——NumberOfSpaces
——charges
———tariffBands
——Description
——MaximumStay
———Amount

---parkingAreas Container Optional List of Parking areas (Accessible parking, Reserved parking)
---ParkingArea Container Mandatory Parking Area
---Description Free Text Optional Description of area
---ParkingProperties Container Optional Properties of parking area
——ParkingUserType Enum Optional Type of Parking area (for Disabled, Reserved)
——spaces Container Optional Container for parking capacity
——ParkingCapacity Container Mandatory Container for parking capacity
——NumberOfSpaces Integer Optional Number of spaces
——charges Container Optional Parking charges for the parking area
———tariffBands Container Optional Charge bands for parking
——Description Free Text Optional Description of parking charge band
——MaximumStay Xsd:Duration Optional Maximum allowed stay duration for tariff amount
———Amount Decimal Optional Charge for stay

Sample request endpoint for stops

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Endpoint Example</td>
<td>For e.g. <a href="http://api.511.org/transit/stopPlaces?api_key=%7Byour-key%7D&amp;operator_id=AC&amp;stop_id=58538&amp;format=Json">http://api.511.org/transit/stopPlaces?api_key={your-key}&amp;operator_id=AC&amp;stop_id=58538&amp;format=Json</a></td>
</tr>
</tbody>
</table>

Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>accept_language</td>
<td>Optional</td>
<td>If multiple languages are supported, this can be used to request data in desired language. If the jurisdiction doesn’t support the response in requested language, response could be in default language selected by jurisdiction.</td>
</tr>
<tr>
<td>Operator_id</td>
<td>Mandatory</td>
<td>The operator_id parameter supports filtering based on a particular operator id/code</td>
</tr>
<tr>
<td>Stop_id</td>
<td>Optional</td>
<td>The stop_id parameter supports filtering based on a particular stop id</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>
The transit stop place response for XML is shown in Appendix A Section A.1.4. The transit stop place response for JSON is shown in Appendix B Section B.1.4.

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual StopPlace resource cannot be identified)

2.5 API: Pattern

Pattern is an ordered list of stop points and time points for a Line, it describes a pattern followed by the public transport vehicle. A pattern may pass through the same stoppoint more than once. A Line may consist of more than one pattern.

Below is a message structure of dataObjects for Pattern contained within a NeTEx ServiceFrame.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for directions and journeyPatterns.</td>
</tr>
<tr>
<td>—directions</td>
<td>Collection of Direction</td>
<td>Optional</td>
<td>A collection of Direction elements referenced by the patterns within thejourneyPatterns collection. Can contain multiple Direction elements, at least one occurrence is mandatory.</td>
</tr>
<tr>
<td>—journeyPatterns</td>
<td>Collection of ServiceJourneyPattern</td>
<td>Mandatory</td>
<td>A collection of ServiceJourneyPattern elements. Can contain multiple ServiceJourneyPattern elements, at least one occurrence is mandatory.</td>
</tr>
</tbody>
</table>

Direction structure

The Direction structure is the main element of the directions collection. It is a classification for the general orientation of a pattern within a Line.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the Direction.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the Direction.</td>
</tr>
</tbody>
</table>

ServiceJourneyPattern structure
The ServiceJourneyPattern structure is the main element of the journeyPatterns collection. It is the journeyPattern for a (passenger carrying) Service.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the ServiceJourneyPattern.</td>
</tr>
<tr>
<td>Extensions</td>
<td>Container</td>
<td>Mandatory</td>
<td>Container for extensions to NeTEx</td>
</tr>
<tr>
<td>— LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Reference to the Line resource.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the ServiceJourneyPattern.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>ID</td>
<td>Mandatory</td>
<td>Reference to the direction</td>
</tr>
<tr>
<td>DestinationDisplayView</td>
<td>Container</td>
<td>Optional</td>
<td>Container for Pattern Headsign</td>
</tr>
<tr>
<td>— FrontText</td>
<td>Free Text</td>
<td>Optional</td>
<td>Pattern Headsign (Should contain Pattern Destination information only)</td>
</tr>
<tr>
<td>pointsInSequence</td>
<td>Container</td>
<td>Mandatory</td>
<td>Contains sequence of points in Servicejourneypattern, points may be scheduledstop points or timingpoints.</td>
</tr>
<tr>
<td>— TimingPointInJourneyPattern</td>
<td>Container</td>
<td>Mandatory</td>
<td>A timing point within the Pattern</td>
</tr>
<tr>
<td>— TimingPointInJourneyPattern id (attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of TimingPointInJourneyPattern</td>
</tr>
<tr>
<td>— TimingPointInJourneyPattern order (attribute)</td>
<td>Positive Integer</td>
<td>Mandatory</td>
<td>Order of Point within PointsInSequence</td>
</tr>
<tr>
<td>— ScheduledStopPointRef ref (attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Identifier of Schedule Stoppoint corresponding to the timing point</td>
</tr>
<tr>
<td>— DestinationDisplayView</td>
<td>Container</td>
<td>Optional</td>
<td>If pattern headsign changes at a stop, specify the headsign here</td>
</tr>
<tr>
<td>—— FrontText</td>
<td>Free Text</td>
<td>Optional</td>
<td>Headsign to display at the stop (Pattern Destination information only)</td>
</tr>
<tr>
<td>— Extensions</td>
<td>Container</td>
<td>Mandatory</td>
<td>Container for extensions to NeTEx</td>
</tr>
<tr>
<td>—— Name</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Timepoint Stop Name.</td>
</tr>
<tr>
<td>—StopPointInJourneyPattern</td>
<td>Container</td>
<td>Mandatory</td>
<td>A stop point within the Pattern</td>
</tr>
<tr>
<td>— StopPointInJourneyPattern id (attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of StopPointInJourneyPattern</td>
</tr>
<tr>
<td>— StopPointInJourneyPattern order (attribute)</td>
<td>Positive Integer</td>
<td>Mandatory</td>
<td>Order of Point within PointsInSequence</td>
</tr>
<tr>
<td>— ScheduledStopPointRef ref (attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Identifier of Schedule Stoppoint</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>DestinationDisplayView</td>
<td>Container</td>
<td>Optional If pattern headsign changes at a stop, specify the headsign here</td>
<td></td>
</tr>
<tr>
<td>FrontText</td>
<td>Free Text</td>
<td>Optional Headsign to display at the stop (Pattern Destination information only)</td>
<td></td>
</tr>
<tr>
<td>Extensions</td>
<td>Container</td>
<td>Mandatory Container for extensions to NeTEx</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Mandatory Stop Name.</td>
<td></td>
</tr>
<tr>
<td>linksInSequence</td>
<td>Container</td>
<td>Optional Sequence of links (The pattern could be represented as one single link or multiple links in sequence)</td>
<td></td>
</tr>
<tr>
<td>ServiceLinkInJourneyPattern</td>
<td>Container</td>
<td>Optional ServiceLine in a specified order</td>
<td></td>
</tr>
<tr>
<td>projections</td>
<td>Container</td>
<td>Optional Projections of the link</td>
<td></td>
</tr>
<tr>
<td>LinkSequenceProjection</td>
<td>Container</td>
<td>Optional Projection of the link sequence as an ordered series of points</td>
<td></td>
</tr>
<tr>
<td>gml:LineString</td>
<td>Line string</td>
<td>Optional Series of points representing the link</td>
<td></td>
</tr>
</tbody>
</table>

### Sample request endpoint for patterns

**Request Type**: GET

**Request Endpoint Example**: For e.g. `http://api.511.org/transit/patterns?api_key={your-key}&operator_id=SF&pattern_id=151834`

### Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>accept_language</td>
<td>Optional</td>
<td>If multiple languages are supported, this can be used to request data in desired language. If the jurisdiction doesn’t support the response in requested language, response could be in default language selected by jurisdiction.</td>
</tr>
<tr>
<td>Operator_id</td>
<td>Mandatory</td>
<td>The operator_id parameter limits the search for lines within a particular operator id/code</td>
</tr>
<tr>
<td>Pattern_id</td>
<td>Optional</td>
<td>The pattern_id parameter supports filtering based on a particular Patternid</td>
</tr>
<tr>
<td>Line_id</td>
<td>Mandatory</td>
<td>The line_id parameter limits the search for patterns within a particular line id (All patterns for specified line_id will be returned)</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>
The transit pattern response for XML is shown in Appendix A Section A.1.5. The transit pattern response for JSON is shown in Appendix B Section B.1.5.

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual Journey pattern resource cannot be identified)

2.6 API: Timetable

Timetable represents a timetable for a given Line, Direction and DayType. It also contains supporting elements referenced by the timetable such as the Route (ordered list of timepoints for which times are provided), day type (service type) and optionally day assignments (assignment of a daytype to each day within the service period). When the IncludeSpecialService parameter is set to true, this API returns all the holiday services (if any) for specified Line. When the IncludeSpecialService parameter is set to false or the IncludeSpecialService parameter is not provided, it returns all the regular timetables for the specified Line. When the ExceptionDate parameter is set to a service exception date (one of the dates returned by the Holiday API for the same agency), the API returns the exception/holiday timetable for the specified line and date. If no timetables are returned, it shall be assumed that the agency is not providing any service for the line on the given exception date.

Below is a message structure of dataObjects for Timetable within a NeTEx CompositeFrame.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CompositeFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container version Frame that groups a set of content version frames to which same validity conditions have been assigned.</td>
</tr>
<tr>
<td>— ServiceFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for routes which is collection of Route. Route represents an ordered list of timepoint stops for which times are provided in the timetable. Multiple routes could be provided in cases where multiple timetables are returned. Each timetable would reference the appropriate route for the timetable.</td>
</tr>
<tr>
<td>— ServiceCalendarFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for collection of DayType and DayTypeAssignments. Should contain at least one DayType. DayTypeAssignments are returned only if requested specifically using the input parameter(flag) IncludeDayTypeAssignments</td>
</tr>
</tbody>
</table>
TimetableFrame

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>— TimetableFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for a timetable. Multiple TimetableFrames can be returned, one per timetable. The id attribute of the TimetableFrame should be unique across all timetables.</td>
</tr>
</tbody>
</table>

Service Calendar Frame Structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for routes.</td>
</tr>
<tr>
<td>— routes</td>
<td>Collection of Routes</td>
<td>Mandatory</td>
<td>A collection of Route elements. Can contain multiple Route elements, at least one occurrence is mandatory.</td>
</tr>
</tbody>
</table>

Route Structure

The Route structure is the main element of the routes collection. At least one Route is mandatory within the routes. Route represents an ordered list of timepoint stops for which times are provided in the timetable.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the Route.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name for the Route.</td>
</tr>
<tr>
<td>LineRef</td>
<td>ID</td>
<td>Mandatory</td>
<td>Reference to the Line, ref attribute contains identifier of the line.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>ID</td>
<td>Mandatory</td>
<td>Reference to the Direction, ref attribute contains identifier to the Direction.</td>
</tr>
<tr>
<td>pointsInSequence</td>
<td>Container</td>
<td>Mandatory</td>
<td>Container for ordered set of time points making up the Route. It should contain at least 2 PointOnRoute.</td>
</tr>
<tr>
<td>— PointOnRoute</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>It is the reference to the ordered route points of Route, id attribute contains unique identifier for PointOnRoute.</td>
</tr>
<tr>
<td>—— PointRef</td>
<td>ID</td>
<td>Mandatory</td>
<td>It is reference scheduled stop point representing the timepoint, ref attribute contains identifier to the point.</td>
</tr>
</tbody>
</table>

DayType Structure
The dayTypes structure contains the collection of DayTypes referenced by the timetables. DayType is a type of day characterized by one or more properties which affect public transport operation.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td><strong>Mandatory</strong></td>
<td>Unique identifier of the DayType.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td><strong>Mandatory</strong></td>
<td>Name of the DayType.</td>
</tr>
<tr>
<td>properties</td>
<td>Container</td>
<td><strong>Mandatory</strong></td>
<td>Container for the list of PropertyOfDay. Should contain at least one PropertyOfDay.</td>
</tr>
<tr>
<td>—PropertyOfDay</td>
<td>Container</td>
<td><strong>Mandatory</strong></td>
<td>A container for DaysOfWeek property.</td>
</tr>
<tr>
<td>——PropertyOfDayGroup</td>
<td>Enum</td>
<td><strong>Mandatory</strong></td>
<td>It contains DaysOfWeek logically appended together</td>
</tr>
</tbody>
</table>

DayTypeAssignment structure

The dayTypeAssignments structure contains the collection of DayTypeAssignments, which links every operating day within the service period to a daytype. The service period is defined within the Timetable Frame.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td><strong>Mandatory</strong></td>
<td>Unique identifier of the DayTypeAssignment.</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the DayTypeAssignment</td>
</tr>
<tr>
<td>Date</td>
<td>Date</td>
<td><strong>Mandatory</strong></td>
<td>Operating Date (within the service period)</td>
</tr>
<tr>
<td>DayTypeRef</td>
<td>Reference</td>
<td><strong>Mandatory</strong></td>
<td>Reference to a DayType (within the ref attribute).</td>
</tr>
</tbody>
</table>

TimetableFrame structure

TimetableFrame is coherent set of timetable data which consist of vehicle Journeys and blocks to which the same validity condition has been assigned.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td><strong>Mandatory</strong></td>
<td>Unique identifier of the TimetableFrame.</td>
</tr>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the TimetableFrame.</td>
</tr>
<tr>
<td>frameValidityConditions</td>
<td>Container</td>
<td><strong>Mandatory</strong></td>
<td>Container for the AvailabilityCondition which applies to whole Timetable.</td>
</tr>
<tr>
<td>— AvailabilityCondition</td>
<td>Container</td>
<td><strong>Mandatory</strong></td>
<td>It is a container for available conditions.</td>
</tr>
<tr>
<td>——FromDate</td>
<td>DateTime</td>
<td><strong>Mandatory</strong></td>
<td>Start date of Timetable validity period.</td>
</tr>
</tbody>
</table>
### ToDate
| DateTime | Mandatory | End date of Timetable validity period. |

### DayTypes
| Container | Mandatory | Container for DayType reference. It lists the daytypes referenced by the timetable. |

### DayTypeRef
| ID | Mandatory | It is a reference to DayType, ref attribute has reference value to a DayType |

### vehicleJourneys
| Container | Mandatory | Container for collection of ServiceJourney (Trip). |

### ServiceJourney
| Free Text | Mandatory | ServiceJourney is a planned movement of public transport on a DayType. Id attribute has unique identifier for Service Journey |

### SiriVehicleJourneyRef
| Free Text | Mandatory | An alternative code that uniquely identifies the journey. Specifically for use in AVMS systems |

### JourneyPatternView
| Container | Mandatory | It is a container for simplified journey pattern view |

### ServiceJourneyPatternRef
| ID | Mandatory | Reference to Service Pattern, ref attribute contains identifier for service journey Pattern |

### RouteRef
| ID | Mandatory | Reference to Route, ref attribute contains identifier for Route |

### DirectionRef
| ID | Mandatory | Reference to Direction, ref attribute contains identifier for Direction |

### calls
| Container | Mandatory | It is container for complete sequence of stops along the route path. |

### call
| Container | Mandatory | It is a visit to a scheduled stop point as part of a vehicle journey, order attribute contains sequence number within the journey |

### ScheduledStopPointRef
| ID | Mandatory | Reference to scheduled stop point, ref attribute contains identifier for scheduled stop point |

### Arrival
| Container | Mandatory | Container for arrival time for call |

### Time (Arrival)
| Time | Mandatory | Arrival time for call |

### DaysOffset (Arrival)
| Integer | Mandatory | When DaysOffset is set to 0, it indicates Time is for the current day. When set to 1, it indicates Time is for the next day. |

### Departure
| Container | Mandatory | Container for departure time for call |

### Time (Departure)
| Time | Mandatory | Departure time for call |

### DaysOffset (Departure)
| Integer | Mandatory | When DaysOffset is set to 0, it indicates Time is for the current day. When set to 1, it indicates Time is for the next day. |

**Sample request endpoint for timetable**
### Request Type

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Request Type</strong></td>
<td>GET</td>
<td></td>
</tr>
</tbody>
</table>

### Request Endpoint Example

For e.g.  
http://api.511.org/transit/timetable?api_key={your-key}&operator_id=BA&line_id=COLS/OAKL

### Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Format</strong></td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td><strong>accept_language</strong></td>
<td>Optional</td>
<td>If multiple languages are supported, this can be used to request data in desired language. If the jurisdiction doesn’t support the response in requested language, response could be in default language selected by jurisdiction.</td>
</tr>
<tr>
<td><strong>Operator_id</strong></td>
<td>Mandatory</td>
<td>The operator_id parameter supports filtering based on a particular operator id/code</td>
</tr>
<tr>
<td><strong>Line_id</strong></td>
<td>Mandatory</td>
<td>The line_id parameter supports filtering based on a particular line id. All timetables for the line are returned</td>
</tr>
<tr>
<td><strong>IncludeDayTypeAssignments</strong></td>
<td>Optional</td>
<td>DayTypeAssignments will be included only if this flag is set to true.</td>
</tr>
<tr>
<td><strong>api_key</strong></td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
<tr>
<td><strong>IncludeSpecialService</strong></td>
<td>Optional</td>
<td>The timetables for service exceptions for the selected Line are returned (if available) when this parameter is set to ‘true’. When this parameter is omitted or the value is set to ‘false’, service exceptions are not included. Any value other than ‘true’ or ‘false’ will result in a 404 error.</td>
</tr>
<tr>
<td><strong>ExceptionDate</strong></td>
<td>Optional</td>
<td>When this parameter is set to one of the dates returned by the Holiday API for the same agency, the exception/holiday timetable for the given line and the exception/holiday is returned. When no timetables are returned for an exception date (no TimetableFrame elements), it should be assumed that the agency is not providing any service for the line on the date. The ExceptionDate should be provided in the yyyymmd format.</td>
</tr>
</tbody>
</table>

The transit timetable response for XML is shown in Appendix A Section A.1.6. The transit timetable response for JSON is shown in Appendix B Section B.1.6.
Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual Holiday resource cannot be identified)

### 2.7 API: Holidays
Holidays is a collection of service exceptions defined by an agency or operator.

Below is a message structure of dataObjects for service exceptions contained within a NeTEx ServiceCalendarFrame.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceCalendarFrame</td>
<td>NeTEx frame</td>
<td>Mandatory</td>
<td>NeTEx container frame for service exceptions and dayTypes.</td>
</tr>
<tr>
<td>— ServiceCalendar</td>
<td>ServiceCalendar</td>
<td>Mandatory</td>
<td>Represents the service period.</td>
</tr>
<tr>
<td>— contentValidityConditions</td>
<td>Collection of AvailabilityCondition</td>
<td>Mandatory</td>
<td>A collection of AvailabilityCondition elements. Can contain multiple AvailabilityCondition elements. Each AvailabilityCondition specifies an exception date/holiday that the agency defines.</td>
</tr>
</tbody>
</table>

**ServiceCalendar structure**

The ServiceCalendar structure represents the service period for the service exceptions.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the ServiceCalendar.</td>
</tr>
<tr>
<td>FromDate</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Start date of ServiceCalendar (Service Period)</td>
</tr>
<tr>
<td>ToDate</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>End date of ServiceCalendar (Service Period)</td>
</tr>
</tbody>
</table>

**AvailabilityCondition structure**

The AvailabilityCondition structure is the main element of the contentValidityConditions collection. Every exception/holiday date defined by the agency is provided as an AvailabilityCondition element.
### Field Types

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>id (Attribute)</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier of the AvailabilityCondition.</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Optional</td>
<td>Description of the AvailabilityCondition.</td>
</tr>
<tr>
<td>FromDate</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Start date of AvailabilityCondition(Service Exception)</td>
</tr>
<tr>
<td>ToDate</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>End date of AvailabilityCondition(Service Exception)</td>
</tr>
</tbody>
</table>

### Sample request endpoint for stops

**Request Type**

GET

For e.g. http://api.511.org/transit/holidays?api_key={your-key}&operator_id=SF

**Parameters and Filters supported with the request**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>accept_language</td>
<td>Optional</td>
<td>If multiple languages are supported, this can be used to request data in desired language. If the jurisdiction doesn’t support the response in requested language, response could be in default language selected by jurisdiction.</td>
</tr>
<tr>
<td>Operator_id</td>
<td>Mandatory</td>
<td>The operator_id parameter supports filtering based on a particular operator id/code</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The transit Holidays response for XML is shown in Appendix A Section A.1.7. The transit Holidays response for JSON is shown in Appendix B Section B.1.7.

### Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual Holiday resource cannot be identified)
2.8 API: Announcement

Announcement is completely SIRI entity; it is a description of a situation/condition about the public transport. Announcement consists of Situations which is collection of PtSituationElement which contains description of situation/condition, at least one PtSituationElement is mandatory.

A message structure of PtSituationElement for Announcement contained within Situations is shown in Appendix C Section C.1.8.

Sample request endpoint for stops

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>For e.g.</td>
<td><a href="http://api.511.org/transit/transitannouncements?api_key=%7Byour-key%7D">http://api.511.org/transit/transitannouncements?api_key={your-key}</a></td>
</tr>
</tbody>
</table>

Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>Operator_id</td>
<td>Optional</td>
<td>The operator_id parameter supports filtering based on a particular operator id/code</td>
</tr>
<tr>
<td>Line_id</td>
<td>Optional</td>
<td>The line_id parameter supports filtering based on a particular line id</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The transit announcement response for XML is shown in Appendix A Section A.1.8. The transit announcement response for JSON is shown in Appendix B Section B.1.8.

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual Announcement resource cannot be identified)

2.9 API: Transit Scheduled Departures for a Stop

SIRI Stop Timetable service provides static/scheduled timetables in the system for a particular stop. A message structure of Transit Scheduled Departures in SIRI ST (Stop Timetable) format which consists of a single ServiceDelivery node containing details on scheduled visits to this stop within a departure window is shown in Appendix C Section C.1.9.
Sample request endpoint

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>LineRef</td>
<td>Optional</td>
<td>The RouteCode that uniquely identifies a transit route.</td>
</tr>
<tr>
<td>OperatorRef</td>
<td>Mandatory</td>
<td>The operator_id parameter supports filtering based on a particular operator id/code</td>
</tr>
<tr>
<td>MonitoringRef</td>
<td>Mandatory</td>
<td>The StopCode that uniquely identifies a physical stop or platform.</td>
</tr>
<tr>
<td>StartTime</td>
<td>Optional</td>
<td>The start date parameter allows for requesting departures within a departure window.</td>
</tr>
<tr>
<td>EndTime</td>
<td>Optional</td>
<td>The end date parameter allows for requesting departures within a departure window.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The example response for XML in SIRI ST format is shown in Appendix A Section A.1.9. The example response for JSON in SIRI ST format is shown in Appendix B Section B.1.9.

2.10 API: Real-time predictions at a Stop

Siri Stop Monitoring service provides current and forthcoming vehicles arrivals and departures at a stop.

A message structure of real-time departures which consists of a single ServiceDelivery node containing details on monitored visits to this stop is shown in Appendix C Section C.1.10

Sample request endpoint

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For e.g. <a href="http://api.511.org/transit/StopMonitoring?api_key=%7Byour-key%7D">http://api.511.org/transit/StopMonitoring?api_key={your-key}</a> &amp;agency=AC</td>
</tr>
</tbody>
</table>
Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
<tr>
<td>agency</td>
<td>Mandatory</td>
<td>Agency ID to be monitored (e.g. actransit)</td>
</tr>
<tr>
<td>stopCode</td>
<td>Optional</td>
<td>Numeric stop code for the stop to be monitored. When stop code is not provided, the API will return all available information for all stops. Depending on the amount of data, the response time for the API can be more than 5-7 seconds.</td>
</tr>
</tbody>
</table>

The transit real time departure service delivery mode response for XML is shown in Appendix A Section A.1.10 and for JSON is shown in Appendix B Section B.1.10.

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If a resource cannot be located)

2.11 API: Real-time Vehicle Monitoring

Siri Vehicle monitoring service provides information about current location and expected activities of a particular vehicle. It also provides details for current and subsequent journey patterns. A message structure for real-time vehicle/trip monitoring which consists of a single ServiceDelivery node containing details on vehicle/trip within an agency that are currently operational and being monitored is shown in Appendix C Section C.1.11.

Sample request endpoint

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Endpoint Example</td>
<td>For e.g. <a href="http://api.511.org/transit/VehicleMonitoring?api_key=%7Byour-key%7D&amp;agency=AC">http://api.511.org/transit/VehicleMonitoring?api_key={your-key}&amp;agency=AC</a></td>
</tr>
</tbody>
</table>
### Parameter Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
<tr>
<td>agency</td>
<td>Mandatory</td>
<td>Agency ID to be monitored (e.g. AC)</td>
</tr>
<tr>
<td>vehicleID</td>
<td>Optional</td>
<td>The unique identifier of the vehicle to be monitored.</td>
</tr>
</tbody>
</table>

The real time vehicle monitoring response for XML in SIRI format is shown in Appendix A Section A.1.11 and for JSON is shown in Appendix B Section B.1.11.

### Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If a resource cannot be located)

### 2.12 API: Transit Schedule Updates for an agency (Possible Future Implementation)

Siri Production Timetable provides information about the expected operation of a transport network for a specified day.

A message structure of Transit Schedule Updates in SIRI PT (Production Timetable) format which consists of a single **ServiceDelivery** node containing details on schedule updates for a specific line and direction by an agency is shown in Appendix C Section C.1.12.

**Sample request endpoint**

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
</table>

| Request Endpoint Example |

**Parameters and Filters supported with the request**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
</table>

---

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<table>
<thead>
<tr>
<th>format</th>
<th>Optional</th>
<th>The response format (json/xml) desired. If none specified, then default response would be JSON.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OperatorRef</td>
<td>Mandatory</td>
<td>The Agency Name that uniquely identifies a transit agency.</td>
</tr>
<tr>
<td>Lineref</td>
<td>Optional</td>
<td>The unique identifier or a transit route. Value could either be RouteCode or RouteName as required. Recommend RouteCode because response has &quot;PublishedLineName&quot; as RouteName.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Optional</td>
<td>Direction (ID) for the route.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The transit schedule update response for XML is shown in Appendix A Section A.1.12. The transit schedule update response for JSON is shown in Appendix B Section B.1.12.

**Possible Errors**

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If a resource cannot be located)

**2.13 API: Transit Addition and Cancellation of Trips by Agency (Possible Future Implementation)**

Siri Estimated Timetable service provides details of the operation of the transport network for a period within the current day, detailing real time deviations from the timetables and control actions affecting the Timetable (cancellations, additional Journeys and Detours).

A message structure of Transit Addition and Cancellation of Trips in SIRI ET (Estimated Timetable) format which consists of a single **ServiceDelivery** node containing details on schedule updates for a specific line and direction by an agency is shown in Appendix C Section C.1.13.

**Sample request endpoint**

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
</table>

**Parameters and Filters supported with the request**
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>OperatorRef</td>
<td>Mandatory</td>
<td>The Agency Name that uniquely identifies a transit agency.</td>
</tr>
<tr>
<td>Lineref</td>
<td>Optional</td>
<td>The unique identifier or a transit route.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value could either be RouteCode or RouteName as required. Recommend RouteCode because response has &quot;PublishedLineName&quot; as RouteName.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Optional</td>
<td>Direction (ID) for the route.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The transit addition and cancellation response for XML is shown in Appendix A Section A.1.13 and for JSON is shown in Appendix B Section B.1.13.

**Possible Errors**

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If a resource cannot be located)

**2.14 API: General Announcements**

Siri General Messaging Service provides a structured way to exchange arbitrary informative messages between participants, such as travel news, or operational advice.

A message structure of Service Announcements in SIRI GM (General Message) format which consists of a single ServiceDelivery node containing details on general messages is shown in Appendix C Section C.1.14.

**Sample request endpoint**

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For e.g. <a href="http://api.511.org/transit/GeneralAnnouncements?api_key=%7Byour-key%7D">http://api.511.org/transit/GeneralAnnouncements?api_key={your-key}</a></td>
</tr>
</tbody>
</table>

**Parameters and Filters supported with the request**
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The transit general messaging service response for XML is shown in Appendix A Section A.1.14 and for JSON is shown in Appendix B Section B.1.14.

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If a resource cannot be located)

2.15 API: GTFS-Realtime Trip Updates

GTFS-realtime Trip Updates service provides real-time update on the progress of the vehicles along a trip. Please refer to the [GTFS-realtime Trip Updates Reference](https://developers.google.com/transit/gtfs-realtime/reference) for reference documentation regarding API response message structure.

GTFS-realtime trip updates service response format type is based on Protocol Buffers, Section B.1.

Sample request endpoint

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>For e.g. <a href="http://api.511.org/Transit/TripUpdates?api_key=%7Byour-key%7D&amp;agency=AC">http://api.511.org/Transit/TripUpdates?api_key={your-key}&amp;agency=AC</a></td>
<td></td>
</tr>
</tbody>
</table>

Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>format</td>
<td>Conditional</td>
<td>Conditional: mandatory if Accept: application/x-google-protobuf (or) Accept: application/octet-stream is not provided in HTTP header.</td>
</tr>
</tbody>
</table>
The response format protobuf desired. If none specified, then Accept: application/x-google-protobuf (or) Accept: application/octet-stream must be provided in HTTP header.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>agency</td>
<td>Mandatory</td>
<td>Agency ID to be monitored (e.g. AC)</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If a resource cannot be located)

2.16 API: GTFS-Realtime Vehicle Positions


GTFS-realtime vehicle position service service response format type is based on Protocol Buffers. Section B.2.

Sample request endpoint

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>For e.g.</td>
<td><a href="http://api.511.org/Transit/VehiclePositions?api_key=%7Byour-key%7D&amp;agency=AC">http://api.511.org/Transit/VehiclePositions?api_key={your-key}&amp;agency=AC</a></td>
</tr>
</tbody>
</table>

Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>format</td>
<td>Conditional</td>
<td>Conditional: mandatory if Accept: application/x-google-protobuf (or) Accept: application/octet-stream is not provided in HTTP header. The response format protobuf desired. If none specified, then Accept: application/x-google-protobuf (or) Accept: application/octet-stream must be provided in HTTP header.</td>
</tr>
<tr>
<td>agency</td>
<td>Mandatory</td>
<td>Agency ID to be monitored (e.g. AC)</td>
</tr>
</tbody>
</table>
**api_key** | *Mandatory* | Unique key assigned to a user after they signup for Open511.

**Possible Errors**

Listed below are HTTP status code and message returned for certain common errors:

- **500** - Internal Server Error (System has issues processing your request)
- **401** – Unauthorized (Invalid API key)
- **404** – Not found (If a resource cannot be located)

### 2.17 GTFS Operator List

GTFS Operator List is the list of operators/agencies that have GTFS dataset available via Open511 APIs

**Sample request endpoint**

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>For e.g. <a href="http://api.511.org/transit/gtfsoperators?api_key=%7Byour-key%7D">http://api.511.org/transit/gtfsoperators?api_key={your-key}</a></td>
<td></td>
</tr>
</tbody>
</table>

Below is a message structure of GTFSAgenciesList which is the main element of XML response for this API.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTFSAgency</td>
<td>XML Element - Container</td>
<td><em>Mandatory</em></td>
<td>Parent element for each operator/agency providing details about that agency/operator</td>
</tr>
<tr>
<td>—Id</td>
<td>XML Attribute - Text</td>
<td><em>Mandatory</em></td>
<td>XML Attribute text value providing Carrier ID (Operator/Agency ID)</td>
</tr>
<tr>
<td>—Name</td>
<td>XML Attribute - Text</td>
<td><em>Mandatory</em></td>
<td>XML Attribute text value providing Carrier Name (Operator/Agency Name)</td>
</tr>
</tbody>
</table>
| — LastGenerated | XML Attribute - Text     | *Mandatory*        | XML Attribute text value providing timestamp when the last GTFS dataset was generated for this operator. The timestamp is in following format: MM/dd/yyyy HH:mm:ss [AM|PM]
|               |                           |                    | Example: 3/20/2016 2:52:54 AM |

**Parameters and Filters supported with the request**
### Parameter Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>Optional</td>
<td>The response format (json/xml) desired. If none specified, then default response would be JSON.</td>
</tr>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

The transit GTFS Operator response for XML is shown in Appendix A Section A.1.15. The transit GTFS response for JSON is shown in Appendix B Section B.1.15.

#### Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- **500 - Internal Server Error** (System has issues processing your request)
- **401 – Unauthorized** (Invalid API key)
- **404 – Not found** (If an individual resource cannot be identified)

### 2.18 GTFS DataFeed download

GTFS datafeed download allows the user to download a zip file containing GTFS dataset for the specified operator/agency.

The zip file contains the text files corresponding to the GTFS file formats. It also contains additional files, called the GTFS+ files, that provide information that is not contained in the GTFS files such as the direction names, farezone names, etc. The list of GTFS+ files and their data structures are provided in Appendix D of this document.

When the request is processed successfully, the user will receive a zip file attachment in response to this API.

#### Sample request endpoint

<table>
<thead>
<tr>
<th>Request Type</th>
<th>GET</th>
</tr>
</thead>
<tbody>
<tr>
<td>For e.g.</td>
<td><a href="http://api.511.org/transit/datafeeds?api_key=%7Byour-key%7D&amp;operator_id=BG">http://api.511.org/transit/datafeeds?api_key={your-key}&amp;operator_id=BG</a></td>
</tr>
</tbody>
</table>

#### Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The operator_id parameter supports filtering based on a particular operator id/code. These operator codes/IDs can be retrieved from CarrierID filed in the GTFS Operator List API response.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
</tbody>
</table>

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual resource cannot be identified)

2.19 GTFS ServiceAlerts

A GTFS dataset for Service Alerts. Service Alerts allow you to provide updates whenever there is disruption on the network.

Data formats supported are: JSON, XML, and Protobuf (default).

Sample request endpoint

**Request Type** GET

```
http://api.511.org/transit/servicealerts?api_key={your-key}
```

Parameters and Filters supported with the request

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>api_key</td>
<td>Mandatory</td>
<td>Unique key assigned to a user after they signup for Open511.</td>
</tr>
<tr>
<td>format</td>
<td>Optional</td>
<td>“json” to receive a JSON response or “xml” to receive an XML response</td>
</tr>
<tr>
<td>agency</td>
<td>Optional</td>
<td>When Agency/Operator ID are provided, the service alerts are filtered by the agency ID. These IDs could be obtained from operators API endpoint.</td>
</tr>
</tbody>
</table>
• 500 - Internal Server Error (System has issues processing your request)
• 401 – Unauthorized (Invalid API key)
• 404 – Not found (If an individual resource cannot be identified)
3 Appendix A: API Response Messages - XML

3.1 Transit XML

A.1.1 Example Transit Operator Response (XML)

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
<siri:ServiceDelivery>
    <siri:ResponseTimestamp>2012-12-17T09:30:46-05:00</siri:ResponseTimestamp>
    <DataObjectDelivery>
        <siri:ResponseTimestamp>2012-12-17T09:30:47.0Z</siri:ResponseTimestamp>
        <dataObjects>
            <ResourceFrame id="RF" version="any">
                <organisations>
                    <Operator id="SF" version="any">
                        <Extensions>
                            <Monitored>true</Monitored>
                            <OtherModes>tram funicular</OtherModes>
                        </Extensions>
                        <Coverage>
                            <gml:Polygon srsName="EPSG:4326">
                                <gml:coordinates>
                                    -71.17,47.33 -71.15,47.36 -71.10,47.35 -71.20,47.40
                                </gml:coordinates>
                            </gml:Polygon>
                        </Coverage>
                    </Operator>
                </organisations>
                <PrivateCode>SF</PrivateCode>
                <SiriOperatorRef>SF</SiriOperatorRef>
                <Name>Muni (San Francisco)</Name>
                <ShortName>Muni</ShortName>
                <Locale>
                    <TimeZone>America/Vancouver</TimeZone>
                    <DefaultLanguage>en</DefaultLanguage>
                </Locale>
                <ContactDetails>
                    <ContactTelephoneNumber>1-415-701-2311</ContactTelephoneNumber>
                    <WebSite>http://www.sfmta.com/</WebSite>
                </ContactDetails>
                <PrimaryMode>bus</PrimaryMode>
            </ResourceFrame>
        </dataObjects>
    </DataObjectDelivery>
</siri:ServiceDelivery>
```

A.1.2 Example Transit Line Response (XML)
<?xml version="1.0" encoding="iso-8859-1"?>
<si:Siiri:Siiri:schemaLocation="http://www.siri.org.uk/siri
  <siiri:ServiceDelivery>
    <siiri:ResponseTimestamp>2013-09-09T16:55:24-08:00</siiri:ResponseTimestamp>
    <DataObjectDelivery>
      <siiri:ResponseTimestamp>2013-09-09T16:55:24-08:00</siiri:ResponseTimestamp>
      <dataObjects>
        <ServiceFrame id="SF" version="any">
          <lines>
            <Line version="any" id="BA:BAY PT/SFIA">
              <Name>Pittsburg/Bay Point to San Francisco International Airport</Name>
              <TransportMode>rail</TransportMode>
              <PublicCode></PublicCode>
              <SiiriLineRef>722</SiiriLineRef>
              <OperatorRef ref="BA"/>
              <Monitored>true</Monitored>
            </Line>
          </lines>
        </ServiceFrame>
      </dataObjects>
    </DataObjectDelivery>
  </siiri:ServiceDelivery>
</siiri:Siri>
### A.1.3 Example Transit Stop Response (XML)

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
  <siri:ServiceDelivery>
    <siri:ResponseTimestamp>2012-12-17T09:30:46-05:00</siri:ResponseTimestamp>
    <DataObjectDelivery>
      <siri:ResponseTimestamp>2012-12-17T09:30:47.0Z</siri:ResponseTimestamp>
      <dataObjects>
        <ServiceFrame version="any" id="SF">
          <scheduledStopPoints>
            <ScheduledStopPoint version="any" id="SF:59921">
              <Name>The Embarcadero &amp; Broadway</Name>
              <Location>
                <Longitude>-122.061515</Longitude>
                <Latitude>37.699237</Latitude>
              </Location>
              <SiriStopPointRef>59921</SiriStopPointRef>
              <StopType>railStation</StopType>
            </ScheduledStopPoint>
            <ScheduledStopPoint version="any" id="SF:58777">
              <Name>The Embarcadero &amp; Green St</Name>
              <Location>
                <Longitude>-122.057358</Longitude>
                <Latitude>37.655923</Latitude>
              </Location>
              <SiriStopPointRef>58777</SiriStopPointRef>
              <StopType>railStation</StopType>
            </ScheduledStopPoint>
            <ScheduledStopPoint version="any" id="SB:98777">
              <Name>San Francisco Ferry Building</Name>
              <Location>
                <Longitude>-122.157358</Longitude>
                <Latitude>37.655923</Latitude>
              </Location>
              <SiriStopPointRef>98777</SiriStopPointRef>
              <StopType>ferryStop</StopType>
            </ScheduledStopPoint>
          </scheduledStopPoints>
          <stopAreas>
            <StopArea version="any" id="StopArea:SF1">
              <Name>MUNI stops at Embarcadero</Name>
              <members>
                <ScheduledStopPointRef version="any" ref="SF:59921"/>
                <ScheduledStopPointRef version="any" ref="SF:58777"/>
              </members>
              <ParentStopAreaRef version="any" ref="StopArea:MTC1"/>
            </StopArea>
            <StopArea version="any" id="StopArea:SB1">
              <Name>SF Bay Ferry stops at Embarcadero</Name>
              <members>
                <ScheduledStopPointRef version="any" ref="SB:98777"/>
              </members>
              <ParentStopAreaRef version="any" ref="StopArea:MTC1"/>
            </StopArea>
          </stopAreas>
          <StopArea version="any" id="StopArea:MTC1">
            <Name>Regional transit stops at Embarcadero</Name>
          </StopArea>
        </ServiceFrame>
      </dataObjects>
    </DataObjectDelivery>
  </siri:ServiceDelivery>
</siri:Siri>
```
A.1.4 Example Transit Stop Place Response (XML)

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
  <siri:ServiceDelivery>
    <siri:ResponseTimestamp>2012-12-17T09:30:46-05:00</siri:ResponseTimestamp>
    <DataObjectDelivery>
      <siri:ResponseTimestamp>2012-12-17T09:30:47.0Z</siri:ResponseTimestamp>
      <dataObjects>
        <SiteFrame version="any" id="SF">
          <stopPlaces>
            <StopPlace version="01" id="BA:12232">
              <Name>BART LAKE MERRIT</Name>
              <Description>800 Madison StreetOakland, CA 94607 (Between Madison St &amp; Fallon St and 8th &amp; 9th)</Description>
              <Centroid>
                <Location>
                  <Longitude>-122.265668</Longitude>
                  <Latitude>37.797345</Latitude>
                </Location>
              </Centroid>
              <AccessibilityAssessment version="any" id="AccessibilityAssessment:BA:12232">
                <MobilityImpairedAccess>true</MobilityImpairedAccess>
                <limitations>
                  <AccessibilityLimitation>
                    <WheelchairAccess>true</WheelchairAccess>
                  </AccessibilityLimitation>
                </limitations>
              </AccessibilityAssessment>
              <alternativeNames>
                <AlternativeName version="any" id="AlternativeName:BA:12232">
                  <Name>Lake Merrit Station</Name>
                </AlternativeName>
              </alternativeNames>
              <PostalAddress version="any" id="PostalAddress:BA:12232">
                <AddressLine1>800 Madison St</AddressLine1>
                <Town>Oakland</Town>
              </PostalAddress>
            </StopPlace>
          </stopPlaces>
        </SiteFrame>
      </dataObjects>
    </DataObjectDelivery>
  </siri:ServiceDelivery>
</siri:Siri>
```
<Url/>
<OperatorRef ref="BA"/>
<adjacentSites>
  <ParkingRef ref="4234"/>
</adjacentSites>
<placeEquipments>
  <SanitaryEquipment version="any" id="123">
    <Description>RestRoom in upper level</Description>
  </SanitaryEquipment>
  <CycleStorageEquipment version="any" id="233">
    <Description>Bike Racks</Description>
    <CycleStorageType>racks</CycleStorageType>
    <NumberOfSpaces>4</NumberOfSpaces>
  </CycleStorageEquipment>
  <CycleStorageEquipment version="any" id="242">
    <Description>Bike Lockers</Description>
    <CycleStorageType>other</CycleStorageType>
    <NumberOfSpaces>10</NumberOfSpaces>
  </CycleStorageEquipment>
  <SignEquipment version="any" id="141">
    <Description>Information Display Board</Description>
  </SignEquipment>
  <EscalatorEquipment version="any" id="335">
    <Description>Escalator 335</Description>
  </EscalatorEquipment>
  <LiftEquipment version="any" id="312">
    <Description>Escalator 312</Description>
  </LiftEquipment>
  <ShelterEquipment version="any" id="12">
    <Description>Waiting area 1</Description>
  </ShelterEquipment>
  <SeatingEquipment version="any" id="4566">
    <Description>Bench near waiting area</Description>
  </SeatingEquipment>
</placeEquipments>
/PublicCode>1564</PublicCode>
<TransportMode>rail</TransportMode>
<StopPlaceType>railStation</StopPlaceType>
<quays>
  <Quay version="any" id="543">
    <CompassOctant>W</CompassOctant>
  </Quay>
</quays>
</StopPlace>
</stopPlaces>
<parkings>
  <Parking version="any" id="4234">
    <Name>Lake Merritt BART Station Parking</Name>
    <Description>On Broadway, between 11th &amp; 14th</Description>
    <Centroid>
      <Location>
        <Longitude>-122.266382</Longitude>
        <Latitude>37.796615</Latitude>
      </Location>
    </Centroid>
  </Parking>
</parkings>

A.1.5 Example Transit Pattern Response (XML)

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
<siri:Siri version="1.0" xmlns:gml="http://www.opengis.net/gml"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  <siri:ServiceDelivery>
    <ParkingType>trainStationParking</ParkingType>
    <TotalCapacity>296</TotalCapacity>
    <RealTimeOccupancyAvailable>false</RealTimeOccupancyAvailable>
    <parkingAreas>
      <ParkingArea version="any" id="123">
        <Description>Accessible Parking</Description>
        <ParkingProperties>
          <ParkingUserType>registeredDisabled</ParkingUserType>
          <spaces>
            <ParkingCapacity version="any" id="ParkingCapacity:123">
              <NumberOfSpaces>10</NumberOfSpaces>
            </ParkingCapacity>
          </spaces>
        </ParkingProperties>
      </ParkingArea>
      <ParkingArea version="any" id="124">
        <Description>Reserved Parking</Description>
        <ParkingProperties>
          <ParkingUserType>reservationHolders</ParkingUserType>
          <spaces>
            <ParkingCapacity version="any" id="ParkingCapacity:124">
              <NumberOfSpaces>99</NumberOfSpaces>
            </ParkingCapacity>
          </spaces>
          <charges>
            <tariffBands>
              <ParkingTariffChargeBand>
                <Description>Single Day Reserved Parking</Description>
                <MaximumStay>P1D</MaximumStay>
                <Amount>4.50</Amount>
              </ParkingTariffChargeBand>
              <ParkingTariffChargeBand>
                <Description>Monthly Reserved Parking</Description>
                <MaximumStay>P1M</MaximumStay>
                <Amount>100</Amount>
              </ParkingTariffChargeBand>
            </tariffBands>
          </charges>
        </ParkingProperties>
      </ParkingArea>
    </parkingAreas>
  </siri:ServiceDelivery>
</siri:Siri>
```
<siri:ResponseTimestamp>2016-11-08T09:41:50-08:00</siri:ResponseTimestamp>
<DataObjectDelivery>
<siri:ResponseTimestamp>2016-11-08T09:41:50-08:00</siri:ResponseTimestamp>
<dataObjects>
<ServiceFrame id="Alcatraz Hornblower Ferry" version="any">
<directions>
<Direction id="IB" version="any">
>Name>Inbound</Name>
</Direction>
<Direction id="OB" version="any">
>Name>Outbound</Name>
</Direction>
</directions>
<journeyPatterns>
<ServiceJourneyPattern id="192989" version="any">
<Extensions>
<LineRef version="any" ref="Day Tour Ferry"/>
</Extensions>
<DirectionRef version="any" ref="IB"/>
<DestinationDisplayView>
<FrontText>Alcatraz</FrontText>
</DestinationDisplayView>
<pointsInSequence>
<TimingPointInJourneyPattern id="8329124" version="any" order="1">
<Extensions>
>Name>Pier 33</Name>
</Extensions>
</TimingPointInJourneyPattern>
<TimingPointInJourneyPattern id="8329125" version="any" order="2">
<Extensions>
>Name>Alcatraz</Extensions>
</TimingPointInJourneyPattern>
</pointsInSequence>
</ServiceJourneyPattern>
<ServiceJourneyPattern id="192990" version="any">
<Extensions>
<LineRef version="any" ref="Day Tour Ferry"/>
</Extensions>
<DirectionRef version="any" ref="OB"/>
<DestinationDisplayView>
<FrontText>Pier 33</FrontText>
</DestinationDisplayView>
<pointsInSequence>
<TimingPointInJourneyPattern id="8329126" version="any" order="1">
<Extensions>
>Name>Alcatraz</Extensions>
</TimingPointInJourneyPattern>
<TimingPointInJourneyPattern id="8329127" version="any" order="2">
<Extensions>
>Name>Pier 33</Extensions>
</TimingPointInJourneyPattern>
</pointsInSequence>
</ServiceJourneyPattern>
</journeyPatterns>
</ServiceFrame>
</DataObjectDelivery>
A.1.6 Example Timetable Response (XML)

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
<siri:ServiceDelivery>
  <siri:ResponseTimestamp>2012-12-17T09:30:46-05:00</siri:ResponseTimestamp>
  <DataObjectDelivery>
    <siri:ResponseTimestamp>2012-12-17T09:30:47.0Z</siri:ResponseTimestamp>
    <dataObjects>
      <CompositeFrame id="CF" version="1">
        <frames>
          <ServiceFrame id="SF" version="any">
            <routes>
              <Route id="BG:TIBURON:North:Weekday" version="any">
                <Name>Tiburon_North_Weekday</Name>
                <LineRef ref="BG:TIBURON" version="any" />
                <DirectionRef ref="BG:TIBURON:North" version="any" />
                <pointsInSequence>
                  <PointOnRoute id="BG:TIBURON:North:Weekday:1" version="any">
                    <PointRef ref="BG:4432" version="any" xsi:type="ScheduledStopPointRefStructure" />
                  </PointOnRoute>
                  <PointOnRoute id="BG:TIBURON:North:Weekday:2" version="any">
                    <PointRef ref="BG:4433" version="any" xsi:type="ScheduledStopPointRefStructure" />
                  </PointOnRoute>
                  <PointOnRoute id="BG:TIBURON:North:Weekday:3" version="any">
                    <PointRef ref="BG:4437" version="any" xsi:type="ScheduledStopPointRefStructure" />
                  </PointOnRoute>
                </pointsInSequence>
              </Route>
              <Route id="BG:TIBURON:North:Weekend" version="any">
                <Name>Tiburon_North_Weekend</Name>
                <LineRef ref="BG:TIBURON" version="any" />
                <DirectionRef ref="BG:TIBURON:North" version="any" />
                <pointsInSequence>
                  <PointOnRoute id="BG:TIBURON:North:Weekend:1" version="any">
                    <PointRef ref="BG:4432" version="any" xsi:type="ScheduledStopPointRefStructure" />
                  </PointOnRoute>
                  <PointOnRoute id="BG:TIBURON:North:Weekend:2" version="any">
                    <PointRef ref="BG:4433" version="any" xsi:type="ScheduledStopPointRefStructure" />
                  </PointOnRoute>
                  <PointOnRoute id="BG:TIBURON:North:Weekend:3" version="any">
                    <PointRef ref="BG:4437" version="any" xsi:type="ScheduledStopPointRefStructure" />
                  </PointOnRoute>
                </pointsInSequence>
              </Route>
            </routes>
          </ServiceFrame>
        </frames>
      </CompositeFrame>
    </dataObjects>
  </DataObjectDelivery>
</siri:ServiceDelivery>
```

<Route>
  <pointsInSequence>
  </pointsInSequence>
</Route>

<ServiceFrame>
  <ServiceCalendarFrame id="SC" version="any">
    <dayTypes>
      <DayType id="BG:Weekday" version="any">
        <Name>Weekday</Name>
        <properties>
          <PropertyOfDay>
            <DaysOfWeek>Monday Tuesday Wednesday Thursday Friday</DaysOfWeek>
          </PropertyOfDay>
        </properties>
      </DayType>
      <DayType id="BG:Weekend" version="any">
        <Name>Weekend</Name>
        <properties>
          <PropertyOfDay>
            <DaysOfWeek>Saturday Sunday</DaysOfWeek>
          </PropertyOfDay>
        </properties>
      </DayType>
    </dayTypes>
    <dayTypeAssignments>
      <DayTypeAssignment>
        <DayTypeRef ref="BG:Weekday" version="any" />
      </DayTypeAssignment>
    </dayTypeAssignments>
  </ServiceCalendarFrame>

<TimetableFrame id="BG:TIBURON:North:Weekday" version="any">
  <Name>Tiburon_North_Weekday</Name>
  <frameValidityConditions>
    <AvailabilityCondition id="AC:BG:TIBURON:North:Weekday" version="any">
      <FromDate>2013-02-06T00:00:00Z</FromDate>
      <ToDate>2013-06-06T00:00:00Z</ToDate>
      <dayTypes>
        <DayTypeRef ref="BG:Weekday" version="any" />
      </dayTypes>
    </AvailabilityCondition>
  </frameValidityConditions>
  <vehicleJourneys>
    <ServiceJourney id="BG:11455" version="any">
      <SiriVehicleJourneyRef>11455</SiriVehicleJourneyRef>
      <JourneyPatternView>
        <ServiceJourneyPatternRef ref="BG:112333" version="any" />
        <RouteRef ref="BG:TIBURON:North:Weekday" version="any" />
        <DirectionRef ref="BG:TIBURON:North:Weekday" version="any" />
      </JourneyPatternView>
      <calls>
        <Call order="1">
          <ScheduledStopPointRef ref="BG:4432" />
          <Arrival>
            <Time>06:05:00</Time>
            <DaysOffset>0</DaysOffset>
          </Arrival>
          <Departure>
            <Time>06:05:00</Time>
            <DaysOffset>0</DaysOffset>
          </Departure>
        </Call>
      </calls>
    </ServiceJourney>
  </vehicleJourneys>
</TimetableFrame>
&lt;/Call&gt;
&lt;Call order="2"&gt;
   &lt;ScheduledStopPointRef ref="BG:4437" /&gt;
   &lt;Arrival&gt;
      &lt;Time&gt;06:30:00&lt;/Time&gt;
      &lt;DaysOffset&gt;0&lt;/DaysOffset&gt;
   &lt;/Arrival&gt;
   &lt;Departure&gt;
      &lt;Time&gt;06:30:00&lt;/Time&gt;
      &lt;DaysOffset&gt;0&lt;/DaysOffset&gt;
   &lt;/Departure&gt;
   &lt;/Call&gt;
&lt;/calls&gt;
&lt;/ServiceJourney&gt;
&lt;ServiceJourney id="BG:11456" version="any">&lt;/ServiceJourney&gt;

   &lt;SiriVehicleJourneyRef&gt;11456&lt;/SiriVehicleJourneyRef&gt;
   &lt;JourneyPatternView&gt;
      &lt;ServiceJourneyPatternRef ref="BG:112334" version="any" /&gt;
      &lt;RouteRef ref="BG:TIBURON:North:Weekday" version="any" /&gt;
      &lt;DirectionRef ref="BG:TIBURON:North" version="any" /&gt;
   &lt;/JourneyPatternView&gt;
   &lt;calls&gt;
      &lt;Call order="1"&gt;
         &lt;ScheduledStopPointRef ref="BG:4433" /&gt;
         &lt;Arrival&gt;
            &lt;Time&gt;10:10:00&lt;/Time&gt;
            &lt;DaysOffset&gt;0&lt;/DaysOffset&gt;
         &lt;/Arrival&gt;
         &lt;Departure&gt;
            &lt;Time&gt;10:10:00&lt;/Time&gt;
            &lt;DaysOffset&gt;0&lt;/DaysOffset&gt;
         &lt;/Departure&gt;
         &lt;/Call&gt;
      &lt;/Call&gt;
      &lt;Call order="2"&gt;
         &lt;ScheduledStopPointRef ref="BG:4437" /&gt;
         &lt;Arrival&gt;
            &lt;Time&gt;10:45:00&lt;/Time&gt;
            &lt;DaysOffset&gt;0&lt;/DaysOffset&gt;
         &lt;/Arrival&gt;
         &lt;Departure&gt;
            &lt;Time&gt;10:45:00&lt;/Time&gt;
            &lt;DaysOffset&gt;0&lt;/DaysOffset&gt;
         &lt;/Departure&gt;
         &lt;/Call&gt;
      &lt;/Call&gt;
   &lt;/calls&gt;
&lt;/ServiceJourney&gt;
&lt;/vehicleJourneys&gt;
&lt;/TimetableFrame&gt;
&lt;/frames&gt;
&lt;/CompositeFrame&gt;
&lt;/dataObjects&gt;
&lt;/DataObjectDelivery&gt;
&lt;/siri:ServiceDelivery&gt;
&lt;/siri:Siri&gt;
A.1.7 Example Transit Holiday Response (XML)

```xml
<?xml version="1.0" encoding="iso-8859-1"?>
xmlns:si="http://www.siri.org.uk/siri">
<ServiceDelivery>
  <ResponseTimestamp>2017-09-21T14:19:54-07:00</ResponseTimestamp>
  <DataObjectDelivery>
    <ResponseTimestamp>2017-09-21T14:19:54-07:00</ResponseTimestamp>
    <dataObjects>
      <ServiceCalendarFrame id="SB" version="any">
        <ServiceCalendar id="SB" version="any">
          <FromDate>2017-05-01</FromDate>
          <ToDate>2017-10-29</ToDate>
        </ServiceCalendar>
        <contentValidityConditions>
          <AvailabilityConditions version="any" id="SB:2017-07-04">
            <FromDate>2017-07-04T00:00:00-07:00</FromDate>
            <ToDate>2017-07-04T23:59:00-07:00</ToDate>
          </AvailabilityConditions>
          <AvailabilityConditions version="any" id="SB:2017-09-04">
            <FromDate>2017-09-04T00:00:00-07:00</FromDate>
            <ToDate>2017-09-04T23:59:00-07:00</ToDate>
          </AvailabilityConditions>
        </contentValidityConditions>
      </ServiceCalendarFrame>
    </dataObjects>
  </DataObjectDelivery>
</siri:Siri>
```

A.1.8 Example Transit Announcement Response (XML)

```xml
<?xml version="1.0" encoding="utf-8"?>
<ServiceDelivery>
  <ResponseTimestamp>2013-02-14T16:05:51Z</ResponseTimestamp>
  <SituationExchangeDelivery version="1.3">
    <ResponseTimestamp>2013-02-14T16:05:51Z</ResponseTimestamp>
    <Situations>
      <PtSituationElement>
        <CreationTime>2013-02-14T16:00:01Z</CreationTime>
        <SituationNumber>734</SituationNumber>
        <Source>
          <SourceType>feed</SourceType>
          <Name>MTC</Name>
        </Source>
        <ValidityPeriod>
          <StartTime>2013-02-14T16:00:00Z</StartTime>
          <EndTime>2013-02-14T16:00:00Z</EndTime>
        </ValidityPeriod>
        <Priority>1</Priority>
        <ScopeType>route</ScopeType>
        <Summary>Major BART Delay</Summary>
      </PtSituationElement>
    </Situations>
  </SituationExchangeDelivery>
</Siri>
```
On Thursday, February 14, at 4:00pm, BART reports a major delay on the Daly City Line in the East Bay direction due to an equipment problem on a train.

```xml
<Description>On Thursday, February 14, at 4:00pm, BART reports a major delay on the Daly City Line in the East Bay direction due to an equipment problem on a train.</Description>
</InfoLinks>
<Consequences>
<Consequence>
<Severity>severe</Severity>
<Affects>
<Operators>
<AffectedOperator>
<OperatorRef>BA</OperatorRef>
<OperatorName>BART</OperatorName>
</AffectedOperator>
</Operators>
<Networks>
<AffectedNetwork>
<AffectedLine>
<LineRef>05099</LineRef>
</AffectedLine>
</AffectedNetwork>
</Networks>
<StopPoints>
<AffectedStopPoints>
<StopPointRef>198761</StopPointRef>
<StopPointRef>198762</StopPointRef>
<StopPointRef>198763</StopPointRef>
<StopPointRef>198764</StopPointRef>
</AffectedStopPoints>
</StopPoints>
</Affects>
</Consequence>
</Consequences>
</SituationElement>
</Situations>
</SituationExchangeDelivery>
</ServiceDelivery>
</Siri>

A.1.9 Example Transit Scheduled Departures for a Stop Response (XML) in SIRI ST format

```xml
<xml version="1.0" encoding="iso-8859-1"?>
<ServiceDelivery>
<ResponseTimestamp>2013-09-10T13:08:23-08:00</ResponseTimestamp>
<Status>true</Status>
<StopTimetableDelivery>
<ResponseTimestamp>2013-09-10T13:08:23-08:00</ResponseTimestamp>
<SubscriptionRef>511SFBay</SubscriptionRef>
<TimetabledStopVisit version="1.4">
<RecordedAtTime>2013-09-02T22:16:20-08:00</RecordedAtTime>
<MonitoringRef>12018522</MonitoringRef>
</TargetedVehicleJourney>
</TimetabledStopVisit>
</StopTimetableDelivery>
</ServiceDelivery>
</Siri>
```
A.1.10 Example Transit Real Time Predictions at a Stop Response (XML) in SIRI format

```xml
<?xml version="1.0" encoding="UTF-8"?>
  <ServiceDelivery>
    <ResponseTimestamp>2004-12-17T09:30:46-05:00</ResponseTimestamp>
    <ProducerRef>BA</ProducerRef>
    <Status>true</Status>
    <StopTimetableDelivery>
      <TimetabledStopVisit version="1.4">
        <RecordedAtTime>2013-09-02T22:16:20-08:00</RecordedAtTime>
        <MonitoringRef>12018522</MonitoringRef>
        <TargetedVehicleJourney>
          <LineRef>917</LineRef>
          <DirectionRef>S</DirectionRef>
          <FramedVehicleJourneyRef>
            <DataFrameRef>2013-08-22</DataFrameRef>
            <DatedVehicleJourneyRef>4718335</DatedVehicleJourneyRef>
          </FramedVehicleJourneyRef>
          <PublishedLineName>DALY/FREMONT</PublishedLineName>
          <OperatorRef>BA</OperatorRef>
          <OriginRef>12018513</OriginRef>
          <OriginName>BART DALY CITY</OriginName>
          <DestinationRef>12018519</DestinationRef>
          <DestinationName>BART FREMONT</DestinationName>
          <VehicleJourneyName>FREMONT</VehicleJourneyName>  
          <TargetedCall>
            <VisitNumber>1</VisitNumber>
            <AimedArrivalTime>2013-08-22T12:16:00-08:00</AimedArrivalTime>
            <AimedDepartureTime>2013-08-22T12:16:00-08:00</AimedDepartureTime>
          </TargetedCall>
        </TargetedVehicleJourney>
      </TimetabledStopVisit>
    </StopTimetableDelivery>
  </ServiceDelivery>
</Siri>
```
<StopMonitoringDelivery version="1.4">
  <ResponseTimestamp>2004-12-17T09:30:47-05:00</ResponseTimestamp>
  <Status>true</Status>
  <MonitoredStopVisit>
    <RecordedAtTime>2004-12-17T09:25:46-05:00</RecordedAtTime>
    <MonitoringRef>EMBR</MonitoringRef>
    <FramedVehicleJourneyRef>
      <LineRef>Warm Springs/South Fremont - Daly City</LineRef>
      <DirectionRef>East</DirectionRef>
      <DataFrameRef>2004-12-17</DataFrameRef>
      <DatedVehicleJourneyRef>1031357WKDY</DatedVehicleJourneyRef>
      <PublishedLineName>Warm Springs/South Fremont - Daly City</PublishedLineName>
      <OperatorRef>BA</OperatorRef>
      <OriginRef>DALY</OriginRef>
      <OriginName>Daly City BART Station</OriginName>
      <DestinationRef>WARM</DestinationRef>
      <DestinationName>Warm Springs/South Fremont</DestinationName>
      <Monitored>true</Monitored>
      <InCongestion>false</InCongestion>
      <VehicleLocation>
        <Longitude>180</Longitude>
        <Latitude>90</Latitude>
      </VehicleLocation>
      <Bearing>23</Bearing>
      <Occupancy>full</Occupancy>
      <VehicleRef>1011730</VehicleRef>
      <ProgressStatus>Service running on time</ProgressStatus>
    </FramedVehicleJourneyRef>
  </MonitoredStopVisit>
  <PreviousCalls>
    <PreviousCall>
      <VisitNumber>2</VisitNumber>
      <StopPointRef>BART_10</StopPointRef>
      <VehicleAtStop>false</VehicleAtStop>
      <AimedDepartureTime>2004-12-17T09:32:43-05:00</AimedDepartureTime>
      <ActualDepartureTime>2004-12-17T09:32:43-05:00</ActualDepartureTime>
    </PreviousCall>
  </PreviousCalls>
  <OnwardCalls>
    <OnwardCall>
      <VisitNumber>4</VisitNumber>
      <StopPointRef>BART_12</StopPointRef>
    </OnwardCall>
  </OnwardCalls>
</StopMonitoringDelivery>
A.1.11 Example Real Time Vehicle Monitoring Response (XML) in SIRI format

```xml
<?xml version="1.0" encoding="UTF-8"?>
  <ServiceDelivery>
    <ResponseTimestamp>2004-12-17T09:30:47-05:00</ResponseTimestamp>
    <ProducerRef>BA</ProducerRef>
  </ServiceDelivery>
</Siri>
```
<Status>true</Status>

<VehicleMonitoringDelivery version="1.4">
  <ResponseTimestamp>2004-12-17T09:30:47-05:00</ResponseTimestamp>
  <VehicleActivity>
    <RecordedAtTime>2004-12-17T09:30:47-05:00</RecordedAtTime>
    <ValidUntilTime>2004-12-17T09:30:47-05:00</ValidUntilTime>
    <MonitoredVehicleJourney>
      <LineRef>17</LineRef>
      <DirectionRef>OUT</DirectionRef>
      <FramedVehicleJourneyRef>
        <DataFrameRef>2004-12-17</DataFrameRef>
        <DatedVehicleJourneyRef>987675</DatedVehicleJourneyRef>
      </FramedVehicleJourneyRef>
      <PublishedLineName>123</PublishedLineName>
      <OperatorRef>BA</OperatorRef>
      <OriginName>SFO</OriginName>
      <Via>
        <PlaceName>16th st</PlaceName>
        <PlaceName>West Oakland</PlaceName>
        <PlaceName>Fremont</PlaceName>
        <DestinationRef>Fremont</DestinationRef>
        <DestinationName>Fremont</DestinationName>
      </Via>
      <VehicleLocation>
        <Longitude>180</Longitude>
        <Latitude>90</Latitude>
      </VehicleLocation>
      <Bearing>123</Bearing>
      <Occupancy>full</Occupancy>
      <ProgressRate>slowProgress</ProgressRate>
      <Delay>PT2M</Delay>
      <ProgressStatus>On time</ProgressStatus>
      <VehicleRef>VEH987654</VehicleRef>
      <PreviousCalls>
        <PreviousCall>
          <StopPointRef>SFO</StopPointRef>
          <VisitNumber>2</VisitNumber>
          <StopPointName>string</StopPointName>
          <VehicleAtStop>false</VehicleAtStop>
          <AimedDepartureTime>2004-12-17T09:32:43-05:00</AimedDepartureTime>
          <ActualDepartureTime>2004-12-17T09:32:43-05:00</ActualDepartureTime>
        </PreviousCall>
      </PreviousCalls>
      <OnwardCalls>
        <OnwardCall>
          <StopPointRef>80</StopPointRef>
          <VisitNumber>4</VisitNumber>
          <StopPointName>16th Street</StopPointName>
          <VehicleAtStop>false</VehicleAtStop>
          <AimedArrivalTime>2004-12-17T09:30:56-05:00</AimedArrivalTime>
          <ExpectedArrivalTime>2004-12-17T09:30:56-05:00</ExpectedArrivalTime>
          <AimedDepartureTime>2004-12-17T09:30:57-05:00</AimedDepartureTime>
          <ExpectedDepartureTime>2004-12-17T09:30:57-05:00</ExpectedDepartureTime>
        </OnwardCall>
      </OnwardCalls>
    </MonitoredVehicleJourney>
  </VehicleActivity>
  <ResponseTimestamp>2004-12-17T09:30:47-05:00</ResponseTimestamp>
</VehicleMonitoringDelivery>
A.1.12 Example Transit Schedule Update Response (XML) in SIRI PT format

```xml
<?xml version="1.0" encoding="UTF-8"?>
  <ServiceDelivery>
    <ResponseTimestamp>2013-02-18T09:30:47-08:00</ResponseTimestamp>
    <Status>true</Status>
    <ProductionTimetableDelivery version="1.4">
      <ResponseTimestamp>2004-12-17T09:30:47-05:00</ResponseTimestamp>
      <ValidUntil>2001-12-17T10:30:47-05:00</ValidUntil>
      <DatedTimetableVersionFrame/>
    </ProductionTimetableDelivery>
  </ServiceDelivery>
</Siri>
```
<RecordedAtTime>2001-12-17T09:30:47-05:00</RecordedAtTime>
<LineRef>123</LineRef>
<DirectionRef>Out</DirectionRef>
<PublishedLineName>String</PublishedLineName>
<DatedVehicleJourney>
<DatedCalls>
<DatedCall>
<StopPointRef>BART_11</StopPointRef>
<CallNote>optional message here</CallNote>
<AimedArrivalTime>2013-02-19T09:55:47-08:00</AimedArrivalTime>
<AimedDepartureTime>2013-02-19T09:56:47-08:00</AimedDepartureTime>
</DatedCall>
<DatedCall>
<StopPointRef>BART_99</StopPointRef>
<CallNote>optional message here</CallNote>
<AimedArrivalTime>2013-02-19T10:15:47-08:00</AimedArrivalTime>
<AimedDepartureTime>2013-02-19T10:16:47-08:00</AimedDepartureTime>
</DatedCall>
</DatedCalls>
</DatedVehicleJourney>
</DatedTimetableVersionFrame>
</ProductionTimetableDelivery>
</ServiceDelivery>
</Siri>

A.1.13 Example Transit Addition and Cancellation of Trip Response (XML) in SIRI ET format

<?xml version="1.0" encoding="UTF-8"?>
<ServiceDelivery>
<ResponseTimestamp>2013-02-18T09:30:47-08:00</ResponseTimestamp>
>Status>true</Status>
<EstimatedTimetableDelivery version="1.4">
<ResponseTimestamp>2004-12-17T09:30:47-05:00</ResponseTimestamp>
<EstimatedJourneyVersionFrame>
<RecordedAtTime>2013-02-18T09:30:47-08:00</RecordedAtTime>
<EstimatedVehicleJourney>
<LineRef>917</LineRef>
<DirectionRef>INBOUND</DirectionRef>
<DatedVehicleJourneyRef>00008</DatedVehicleJourneyRef>
<Cancellation>false</Cancellation>
<PublishedLineName>Fremont</PublishedLineName>
<EstimatedCalls>
<EstimatedCall>
<StopPointRef>BART_11</StopPointRef>
<CallNote>optional message here</CallNote>
<AimedArrivalTime>2013-02-19T09:55:47-08:00</AimedArrivalTime>
<AimedDepartureTime>2013-02-19T09:56:47-08:00</AimedDepartureTime>
</EstimatedCall>
<EstimatedCall>
<StopPointRef>BART_99</StopPointRef>
<CallNote>optional message here</CallNote>
</EstimatedCall>
</EstimatedCalls>
</EstimatedVehicleJourney>
</EstimatedTimetableDeliveryVersionFrame>
</ProductionTimetableDelivery>
</ServiceDelivery>
</Siri>
<AimedArrivalTime>2013-02-19T10:15:47-08:00</AimedArrivalTime>
<AimedDepartureTime>2013-02-19T10:16:47-08:00</AimedDepartureTime>

</EstimatedCall>
</EstimatedCalls>
</EstimatedVehicleJourney>

<LineRef>764</LineRef>
(DirectionRef)INBOUND</DirectionRef>
</DatedVehicleJourneyRef>00008</DatedVehicleJourneyRef>
<Cancellation>true</Cancellation>
</PublishedLineName>Pittsburgh Bay Point</PublishedLineName>
</EstimatedVehicleJourney>
</EstimatedJourneyVersionFrame>
</EstimatedTimetableDelivery>
</ServiceDelivery>
</Siri>

A.1.14 Example Transit General Messaging Service Response (XML) in SIRI GM format

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ServiceDelivery>
  <ResponseTimestamp>2013-02-17T09:30:46-08:00</ResponseTimestamp>
  <Status>true</Status>
  <GeneralMessageDelivery version="1.4">
    <ResponseTimestamp>2001-12-17T09:30:47.0Z</ResponseTimestamp>
    <GeneralMessage formatRef="string">
      <RecordedAtTime>2013-02-17T09:30:46-08:00</RecordedAtTime>
      <InfoMessageIdentifier>12345</InfoMessageIdentifier>
      <InfoMessageVersion>2</InfoMessageVersion>
      <InfoChannelRef>WARNINGS</InfoChannelRef>
      <ValidUntilTime>2013-02-18T09:30:46-08:00</ValidUntilTime>
      <Content>some message here</Content>
    </GeneralMessage>
    <GeneralMessage formatRef="string">
      <RecordedAtTime>2013-02-17T09:30:46-08:00</RecordedAtTime>
      <InfoMessageIdentifier>23456</InfoMessageIdentifier>
      <InfoMessageVersion>1</InfoMessageVersion>
      <InfoChannelRef>WARNINGS</InfoChannelRef>
      <ValidUntilTime>2013-02-18T09:30:46-08:00</ValidUntilTime>
      <Content>some message here</Content>
    </GeneralMessage>
  </GeneralMessageDelivery>
</ServiceDelivery>
</Siri>

A.1.15 Example Transit GTFS Operator List in XML format

```xml
<GTFSAgencies>
  <GTFSAgency Id="3D" Name="Tri Delta Transit" LastGenerated="9/8/2017 5:22:04 PM"/>
  <GTFSAgency Id="AC" Name="AC Transit" LastGenerated="8/27/2017 6:06:13 PM"/>
  <GTFSAgency Id="BA" Name="BART" LastGenerated="6/6/2017 1:26:30 PM"/>
</GTFSAgencies>
```
A.1.16 Example Transit ServiceAlerts Response (XML)

```xml
    <header>
        <gtfs_realtime_version>1.0</gtfs_realtime_version>
        <incrementality>FULL_DATASET</incrementality>
        <timestamp>636011670669241956</timestamp>
    </header>
    <entity>
        <FeedEntity>
            <alert>
                <active_period>
                    <TimeRange>
                        <end>1483171200</end>
                        <start>1451635200</start>
                    </TimeRange>
                </active_period>
                <cause>CONSTRUCTION</cause>
                <description_text>
                    <translation>
                        <TranslatedString.Translation>
                            <language>en</language>
                            <text>Construction of a portion of the Bay Area Express Lanes began August 2015 and is scheduled to last approximately 15 months on I-680 between Walnut Creek and San Ramon.</text>
                        </TranslatedString.Translation>
                    </translation>
                </description_text>
                <effect>SIGNIFICANT_DELAYS</effect>
                <header_text>
                    <translation>
                        <TranslatedString.Translation>
                            <language>en</language>
                            <text>Construction Update: Express Lanes Under Construction</text>
                        </TranslatedString.Translation>
                    </translation>
                </header_text>
            </alert>
        </FeedEntity>
    </entity>
</FeedMessage>
```
<_route_type>0</_route_type>
<_stop_id i:nil="true"/>
<_trip i:nil="true"/>
</EntitySelector>
<_informed_entity>
<_url>
<_translation>
<TranslatedString.Translation>
<_language>en</_language>
<_text>http://mtcexpresslanes.org/projects/express_lanes/projects/i680_contracosta_south.htm</_text>
</TranslatedString.Translation>
</_translation>
</url>
</alert>
<_id>10</_id>
<_is_deleted>false</_is_deleted>
<_trip_update i:nil="true"/>
<_vehicle i:nil="true"/>
</FeedEntity>
</_entity>
</FeedMessage>
4 Appendix B: API Response Messages- JSON

4.1 Transit JSON

B.1.1 Example Transit Operator Response (JSON)

```
{
    "content": {
        "Id": "SF",
        "Name": "San Francisco Municipal Railway",
        "ShortName": "Muni",
        "SiriOperatorRef": "SF",
        "TimeZone": "America/Vancouver",
        "DefaultLanguage": "en",
        "ContactTelephoneNumber": "1-415-701-2311",
        "WebSite": "http://www.sfmta.com/",
        "PrimaryMode": "bus",
        "PrivateCode": "SF",
        "Monitored": true,
        "OtherModes": "tram, funicular",
        "Coverage": {
            "type": "Polygon",
            "coordinates": [
                [-71.17, 47.33],
                [-71.15, 47.36],
                [-71.1, 47.35],
                [-71.2, 47.4],
                [-71.17, 47.33]
            ]
        }
    }
}
```

B.1.2 Example Transit Line Response (JSON)
B.1.3 Example Transit Stop Response (JSON)

```
"content": {
  "Id": "AC:59921",
  "Name": "CENTER ST & CIRCLE AV",
  "Location": {
    "Longitude": "-122.061515",
    "Latitude": "37.699237"
  }
},
"stopareas": {
  "StopArea": {
    "Id": "StopArea:SF1",
    "Name": "MUNI stops at Embarcadero",
    "ScheduledStopPointRef": [
      "SF:59921",
      "SF:58777"
    ],
    "ParentStopAreaRef": "StopArea:MTC1"
  }
}
```

B.1.4 Example Transit StopPlace Response (JSON)

```
"content": {
  "Id": "BA:12232",
  "Name": "BART LAKE MERRIT",
  "Description": "800 Madison StreetOakland, CA 94607 (Between Madison St & Fallon St and 8th & 9th)",
  "Centroid": {
    "Location": {
      "Longitude": "-122.265668",
      "Latitude": "37.797345"
    }
  },
  "AccessibilityAssessment": {
    "MobilityImpairedAccess": "true",
    "limitations": {
      "AccessibilityLimitation": { "WheelchairAccess": "true" }
    }
  }
}
```
},
"alternativeNames": {
  "AlternativeName": { "Name": "Lake Merrit Station" }
},
"PostalAddress": {
  "AddressLine1": "800 Madison St",
  "Town": "Oakland"
},
"OperatorRef": "BA",
"adjacentSites": { "ParkingRef": "4234" },
"placeEquipments": {
  "SanitaryEquipment": { "Description": "RestRoom in upper level" },
  "CycleStorageEquipment": [
    { "Description": "Bike Racks",
      "CycleStorageType": "racks",
      "NumberOfSpaces": "4"
    },
    { "Description": "Bike Lockers",
      "CycleStorageType": "other",
      "NumberOfSpaces": "10"
    }
  ],
  "SignEquipment": { "Description": "Information Display Board" },
  "EscalatorEquipment": { "Description": "Escalator 335" },
  "LiftEquipment": { "Description": "Escalator 312" },
  "ShelterEquipment": { "Description": "Waiting area 1" },
  "SeatingEquipment": { "Description": "Bench near waiting area" }
},
"PublicCode": "1564",
"TransportMode": "rail",
"StopPlaceType": "railStation",
"quays": {
  "Quay": { "CompassOctant": "W" }
},
"parkings": {
  "Parking": {
    "Id": "4234",
    "Name": "Lake Merritt BART Station Parking",
    "Description": "On Broadway, between 11th & 14th",
    "Centroid": {
      "Location": {
        "Longitude": "-122.266382",
        "Latitude": "37.796615"
      }
    },
    "PostalAddress": {
      "AddressLine1": "800 Madison St",
      "Town": "Oakland"
    },
    "ParkingType": "trainStationParking",
    "TotalCapacity": "296",
    "RealTimeOccupancyAvailable": "false",
    "parkingAreas": {
      "ParkingArea": [
        { "Id": "123",
          "Description": "Accessible Parking",
          "Capacity": "20"
        },
        { "Id": "124",
          "Description": "Bike Parking",
          "Capacity": "20"
        }
      ]
    }
  }
}
"ParkingProperties": {
  "ParkingUserType": "registeredDisabled",
  "spaces": {
    "ParkingCapacity": { "NumberOfSpaces": "10" }
  }
},
{
  "Id": "124",
  "Description": "Reserved Parking",
  "ParkingProperties": {
    "ParkingUserType": "reservationHolders",
    "spaces": {
      "ParkingCapacity": { "NumberOfSpaces": "99" }
    },
    "charges": {
      "tariffBands": {
        "ParkingTariffChargeBand": [
          { "Description": "Single Day Reserved Parking", "MaximumStay": "P1D", "Amount": "4.50" },
          { "Description": "Monthly Reserved Parking", "MaximumStay": "P1M", "Amount": "100" }
        ]
      }
    }
  }
}
{  
  "directions": [  
    {  
      "DirectionId": "IB",  
      "Name": "Inbound"  
    },  
    {  
      "DirectionId": "OB",  
      "Name": "Outbound"  
    }  
  ],  
  "journeyPatterns": [  
    {  
      "serviceJourneyPatternRef": "192989",  
      "LineRef": "Day Tour Ferry",  
      "Name": "Alcatraz",  
      "DirectionRef": "IB",  
      "DestinationDisplayView": {  
        "FontText": "Alcatraz"  
      },  
      "PointsInSequence": {  
        "StopPointInJourneyPattern": [ ],  
        "TimingPointInJourneyPattern": [  
          {  
            "TimingPointInJourneyPatternId": "8329124",  
            "Order": "1",  
            "ScheduledStopPointRef": "12175093",  
            "Name": "Pier 33"  
          },  
          {  
            "TimingPointInJourneyPatternId": "8329125",  
            "Order": "2",  
            "ScheduledStopPointRef": "12175092",  
            "Name": "Alcatraz"  
          }  
        ]  
      },  
      "LinksInSequence": {  
        "ServiceLinkInJourneyPattern": ""  
      }  
    },  
    {  
      "serviceJourneyPatternRef": "192990",  
      "LineRef": "Day Tour Ferry",  
      "Name": "Pier 33",  
      "DirectionRef": "OB",  
      "DestinationDisplayView": {  
        "FontText": "Pier 33"  
      },  
      "PointsInSequence": {  
        "StopPointInJourneyPattern": [ ],  
        "TimingPointInJourneyPattern": [  
          {  
            "TimingPointInJourneyPatternId": "8329126",  
            "Order": "1",  
            "ScheduledStopPointRef": "12175092",  
            "Name": "Alcatraz"  
          },  
          {  
            "TimingPointInJourneyPatternId": "8329127",  
            "Order": "2",  
            "ScheduledStopPointRef": "12175093",  
            "Name": "Pier 33"  
          }  
        ]  
      },  
      "LinksInSequence": {  
        "ServiceLinkInJourneyPattern": ""  
      }  
    }  
  ]}
B.1.6 Example Timetable Response (JSON)

```json
{
    "Content": {
        "ServiceFrame": {
            "id": "SF",
            "routes": {
                "Route": [
                    {
                        "id": "86855",
                        "Name": "10:IB:Weekdays",
                        "LineRef": { "ref": "10" },
                        "DirectionRef": { "ref": "IB" },
                        "pointsInSequence": {
                            "PointOnRoute": [
                                {
                                    "id": "86855:1",
                                    "PointRef": { "ref": "17518", "type": "ScheduledStopPointRefStructure" }
                                },
                                {
                                    "id": "86855:2",
                                    "PointRef": { "ref": "14350", "type": "ScheduledStopPointRefStructure" }
                                },
                                {
                                    "id": "86855:3",
                                    "PointRef": { "ref": "16700", "type": "ScheduledStopPointRefStructure" }
                                },
                                {
                                    "id": "86855:4",
                                    "PointRef": { "ref": "16695", "type": "ScheduledStopPointRefStructure" }
                                },
                                {
                                    "id": "86855:5",
                                    "PointRef": { "ref": "16700", "type": "ScheduledStopPointRefStructure" }
                                }
                            ]
                        }
                    }
                ]
            }
        }
    }
}
```
"PointRef": {"ref": "16333", "type": "ScheduledStopPointRefStructure" }
  }
]
}

{
  "id": "86858",
  "Name": "10:OB:Weekdays",
  "LineRef": {"ref": "10" },
  "DirectionRef": {"ref": "OB"},
  "pointsInSequence": {
    "PointOnRoute": [
      {
        "id": "86858:1",
        "PointRef": {"ref": "15147", "type": "ScheduledStopPointRefStructure" }
      },
      {
        "id": "86858:2",
        "PointRef": { "ref": "15859", "type": "ScheduledStopPointRefStructure" }
      },
      {
        "id": "86858:3",
        "PointRef": { "ref": "15853", "type": "ScheduledStopPointRefStructure" }
      },
      {
        "id": "86858:4",
        "PointRef": { "ref": "16327", "type": "ScheduledStopPointRefStructure" }
      },
      {
        "id": "86858:5",
        "PointRef": { "ref": "13008", "type": "ScheduledStopPointRefStructure" }
      }
    ]
  },
  "ServiceCalendarFrame": {
    "id": "SF",
    "dayTypes": {
      "DayType": [
        {
          "id": "6098",
          "Name": "Weekdays",
          "properties": {
            "PropertyOfDay": { "DaysOfWeek": "Monday Tuesday Wednesday Thursday Friday "}
          }
        }
      ]
    }
  }
}
"dayTypeAssignments": {
  "DayTypeAssignment": {
    "DayTypeRef": { "ref": "6098" }
  }
},
"TimetableFrame": [
  {"id": "Timetable:86855",
   "Name": "10:IB:Weekdays",
   "frameValidityConditions": {
     "AvailabilityCondition": {
       "id": "10:IB:Weekdays",
       "FromDate": "2013-02-18T09:30:47-08:00",
       "ToDate": "2013-02-18T09:30:47-08:00",
       "dayTypes": { "DayTypeRef": { "ref": "6098" } }
     }
   }
  },
  "vehicleJourneys": {
    "ServiceJourney": [
      {"id": "4769819",
       "SiriVehicleJourneyRef": "4769819",
       "JourneyPatternView": {
         "RouteRef": {
           "ref": "86855"
         },
         "DirectionRef": {
           "ref": "IB"
         }
       },
       "calls": {
         "Call": [
           {"order": "1",
            "ScheduledStopPointRef": { "ref": "17518" },
            "Arrival": { "Time": "05:03:00", "DaysOffset": "0" },
            "Departure": { "Time": "05:03:00", "DaysOffset": "0" }
           },
           {"order": "2",
            "ScheduledStopPointRef": { "ref": "14350" },
            "Arrival": { "Time": "05:17:00", "DaysOffset": "0" },
            "Departure": { "Time": "05:17:00", "DaysOffset": "0" }
           },
           {"order": "3",
            "ScheduledStopPointRef": { "ref": "16700" },
            // More calls...
           }
         ]
       }
    }
  }
}
"Arrival": {"Time": "05:20:00", "DaysOffset": "0"},
"Departure": {"Time": "05:20:00", "DaysOffset": "0"}
},
{
    "order": "4",
    "ScheduledStopPointRef": {"ref": "16695"},
    "Arrival": {"Time": "05:22:00", "DaysOffset": "0"},
    "Departure": {"Time": "05:22:00", "DaysOffset": "0"}
},
{
    "order": "5",
    "ScheduledStopPointRef": {"ref": "16333"},
    "Arrival": {"Time": "05:32:00", "DaysOffset": "0"},
    "Departure": {"Time": "05:32:00", "DaysOffset": "0"}
}
],
"id": "4769820",
"SiriVehicleJourneyRef": "4769820",
"JourneyPatternView": {
    "RouteRef": {"ref": "86855"},
    "DirectionRef": {"ref": "IB"}
},
"calls": {
    "Call": [
        {
            "order": "1",
            "ScheduledStopPointRef": {"ref": "17518"},
            "Arrival": {"Time": "05:30:00", "DaysOffset": "0"},
            "Departure": {"Time": "05:30:00", "DaysOffset": "0"}
        },
        {
            "order": "2",
            "ScheduledStopPointRef": {"ref": "14350"},
            "Arrival": {"Time": "05:44:00", "DaysOffset": "0"},
            "Departure": {"Time": "05:44:00", "DaysOffset": "0"}
        },
        {
            "order": "3",
            "ScheduledStopPointRef": {"ref": "16700"},
            "Arrival": {"Time": "05:47:00", "DaysOffset": "0"},
            "Departure": {"Time": "05:47:00", "DaysOffset": "0"}
        },
        {
            "order": "4",
            "ScheduledStopPointRef": {"ref": "16695"},
            "Arrival": {"Time": "05:49:00", "DaysOffset": "0"},
            "Departure": {"Time": "05:49:00", "DaysOffset": "0"}
        }
    ]}
```json
{
    "order": "5",
    "ScheduledStopPointRef": {"ref": "16333"},
    "Arrival": {"Time": "05:59:00", "DaysOffset": "0"},
    "Departure": {"Time": "05:59:00", "DaysOffset": "0"}
}
```
B.1.7 Example Transit Holiday Response (JSON)

```json
{
    "Content": {
        "ServiceCalendar": {
            "id": "SB",
            "FromDate": "2017-05-01",
            "ToDate": "2017-10-29"
        },
        "AvailabilityConditions": [
            {
                "version": "any",
                "id": "SB:2017-07-04",
                "FromDate": "2017-07-04T00:00:00-07:00",
                "ToDate": "2017-07-04T23:59:00-07:00"
            },
            {
                "version": "any",
                "id": "SB:2017-09-04",
                "FromDate": "2017-09-04T00:00:00-07:00",
                "ToDate": "2017-09-04T23:59:00-07:00"
            }
        ]
    }
}
```

B.1.8 Example Transit Announcement Response (JSON)

```json
{
    "Siri": {
        "ServiceDelivery": {
            "ResponseTimestamp": "2013-09-10T15:53:47-08:00",
            "SituationExchangeDelivery": {
                "Situations": {
                    "PtSituationElement": {
                        "CreationTime": "2013-09-05T09:39:27-08:00",
                        "SituationNumber": "169230",
                        "Source": {
                            "SourceType": "feed",
                            "Name": "MTC"
                        },
                        "ValidityPeriod": {
                            "StartTime": "2013-09-05T00:00:00-08:00",
                            "EndTime": "2013-10-06T00:00:00-08:00"
                        },
                        "UnknownReason": null,
                        "Priority": "2",
                        "ScopeType": "route",
                        "Summary": "Long-term Detour on Line 74 until May 2015",
                        "Description": "Due to a long-term construction project in Richmond, Line 74 will be
detoured from August 26, 2013 through May 2015. &lt;br /&gt;&lt;br /&gt;Line 74 will not serve the stops
on Marina Bay Parkway at Meeker Avenue in either direction. Board Line 74 to Harbour Way on South
23rd Street at Potrero Avenue or to Hilltop Mall/Castro Ranch Road on South 23rd Street at Cutting
Boulevard.&lt;br /&gt;&lt;br /&gt;Line 74 will also not serve the stops on Marina Bay Parkway at Pierson"
                    }
                }
            }
        }
    }
}
```
Avenue. Board Line 74 to Harbour Way on Regatta Boulevard at Seadrift Drive or to Hilltop Mall/Castro Ranch Road on Regatta Boulevard at Melville Square. 

```
"InfoLinks": { 
  "InfoLink": { 
    "Uri": null 
  },
},
"Consequences": { 
  "Consequence": { 
    "Severity": "normal", 
    "Affects": { 
      "Operators": { 
        "AffectedOperator": { 
          "OperatorRef": "AC Transit",  
          "OperatorName": "AC" 
        } 
      },
      "Networks": { 
        "AffectedNetwork": { 
          "AffectedLine": { 
            "LineRef": "74" 
          } 
        } 
      } 
    } 
  } 
}
```

**B.1.9 Example Transit Scheduled Departures for a Stop Response (JSON) in SIRI ST format**

```
{
  "Siri":{
    "ServiceDelivery":{
      "ResponseTimestamp": "2013-02-18T09:30:47-08:00",
      "Status":true,
      "StopTimetableDelivery":{
        "version":1.4,
        "ResponseTimestamp": "2004-12-17T09:30:47-05:00",
        "TimetabledStopVisit":{
          "RecordedAtTime": "2004-12-17T09:25:46-05:00",
          "MonitoringRef": "HLTST011",
          "TargetedVehicleJourney":{
            "LineRef":17,
            "DirectionRef": "INBOUND",
            "DatedVehicleJourneyRef": " TRP123214",
            "PublishedLineName": "Fremont",
            "OperatorRef": "BA", 
            "OriginRef": "BART_11",
            "OriginName": "BART_CIVIC CENTER",
            "DestinationRef": "BART_99",
            "DestinationName": "BART_16th St-Mission" 
          } 
        } 
      } 
    } 
  } 
```
B.1.10 Example Transit Real Time Predictions at a StopResponse (JSON) in SIRI format

```json
{
    "VehicleJourneyName": "16th St-Mission",
    "TargetedCall": {
        "VisitNumber": 1,
        "AimedArrivalTime": "2013-02-18T09:47:08:00",
        "AimedDepartureTime": "2013-02-18T09:47:08:00"
    },
    "RecordedAtTime": "2004-12-17T09:25:46-05:00",
    "MonitoringRef": "EMBR",
    "TargetedVehicleJourney": {
        "LineRef": 17,
        "DirectionRef": "INBOUND",
        "DatedVehicleJourneyRef": "TRP544514",
        "PublishedLineName": "Fremont",
        "OperatorRef": "BART",
        "OriginRef": "BART_11",
        "OriginName": "BART_CIVIC CENTER",
        "DestinationRef": "BART_99",
        "DestinationName": "BART_16th St-Mission",
        "VehicleJourneyName": "16th St-Mission",
        "TargetedCall": {
            "VisitNumber": 2,
            "AimedArrivalTime": "2013-02-18T09:45:46-05:00",
            "AimedDepartureTime": "2013-02-18T09:45:46-05:00"
        }
    }
}
```
"PublishedLineName": "Warm Springs/South Fremont - Daly City",
"OperatorRef": "BA",
"OriginRef": "DALY",
"OriginName": "Daly City BART Station",
"DestinationRef": "WARM",
"DestinationName": "Warm Springs/South Fremont",
"Monitored":true,
"InCongestion":false,
"VehicleLocation":{
  "Longitude":180,
  "Latitude":90
},
"ProgressStatus": "Service running on time",
"Bearing": 23,
"Occupancy": "full",
"VehicleRef": "1011",
"PreviousCalls":{
  "PreviousCall":{
    "StopPointRef": "BART_10",
    "VisitNumber":2,
    "StopPointName": "BART_DALY CITY",
    "VehicleAtStop":false,
    "AimedDepartureTime": "2004-12-17T09:32:43-05:00",
    "ActualDepartureTime": "2004-12-17T09:32:43-05:00"
  }
},
"MonitoredCall":{
  "StopPointRef": "EMBR",
  "VisitNumber": "1",
  "StopPointName": "Embarcadero BART Station",
  "VehicleAtStop":false,
  "VehicleLocationAtStop":{
    "Longitude":180,
    "Latitude":90
  },
  "AimedArrivalTime": "2004-12-17T09:40:46-05:00",
  "ExpectedArrivalTime": "2004-12-17T09:40:46-05:00",
  "AimedDepartureTime": "2004-12-17T09:42:47-05:00",
  "ExpectedDepartureTime": "2004-12-17T09:40:47-05:00"
},
"OnwardCalls":{
  "OnwardCall":{
    "StopPointRef": "BART_12",
    "VisitNumber":4,
    "StopPointName": "BAR_12th St Oakland",
    "VehicleAtStop":false,
    "AimedArrivalTime": "2004-12-17T09:30:56-05:00",
    "ExpectedArrivalTime": "2004-12-17T09:30:56-05:00",
    "AimedDepartureTime": "2004-12-17T09:30:57-05:00",
    "ExpectedDepartureTime": "2004-12-17T09:30:57-05:00"
  }
}
},
"MonitoredStopVisitCancellation":[]
B.1.11 Example Real Time Vehicle Monitoring Response (JSON) in SIRI format

```json
{
    "Siri":{
        "ServiceDelivery":{
            "ResponseTimestamp": "2004-12-17T09:30:47-05:00",
            "ProducerRef": "BA",
            "Status":true,
            "VehicleMonitoringDelivery":{
                "version":1.4,
                "ResponseTimestamp": "2004-12-17T09:30:47-05:00",
                "VehicleActivity":{
                    "RecordedAtTime": "2004-12-17T09:30:47-05:00",
                    "ValidUntilTime": "2004-12-17T09:30:47-05:00",
                    "MonitoredVehicleJourney":{
                        "LineRef":17,
                        "DirectionRef": "OUT",
                        "FramedVehicleJourneyRef":{
                            "DataFrameRef": "2004-12-17",
                            "DatedVehicleJourneyRef": "0987654"
                        }
                    }
                }
            }
        }
    }
}
```
"DatedVehicleJourneyRef":987675
",
"PublishedLineName":123,
"OperatorRef": "BA",
"OriginName": "SFO",
"Via": {
  "PlaceName": "16th st"
}, {
  "PlaceName": "West Oakland"
},
"DestinationRef": "Fremont",
"DestinationName": "Fremont",
"Monitored": true,
"InCongestion": false,
"VehicleLocation": {
  "Longitude": 180,
  "Latitude": 90
},
"Bearing": 123,
"Occupancy": "full",
"ProgressRate": "slowProgress",
"Delay": "PT2M",
"ProgressStatus": "On time",
"VehicleRef": "VEH987654",
"PreviousCalls": {
  "PreviousCall": {
    "StopPointRef": "SFO",
    "VisitNumber": 2,
    "StopPointName": "String",
    "VehicleAtStop": false,
    "AimedDepartureTime": "2004-12-17T09:32:43-05:00",
    "ActualDepartureTime": "2004-12-17T09:32:43-05:00"
  }
},
"OnwardCalls": {
  "OnwardCall": {
    "StopPointRef": 80,
    "VisitNumber": 4,
    "StopPointName": "16th Street",
    "VehicleAtStop": false,
    "AimedArrivalTime": "2004-12-17T09:30:56-05:00",
    "ExpectedArrivalTime": "2004-12-17T09:30:56-05:00",
    "AimedDepartureTime": "2004-12-17T09:30:57-05:00",
    "ExpectedDepartureTime": "2004-12-17T09:30:57-05:00"
  }
}
},
"RecordedAtTime": "2004-12-17T09:30:47-05:00",
"ValidUntilTime": "2004-12-17T09:30:47-05:00",
"VehicleMonitoringRef": 45678,
"MonitoredVehicleJourney": {
  "LineRef": "Line123",
  "FramedVehicleJourneyRef": {
    "DataFrameRef": "2004-12-17"
  }
}
B.1.12 Example Transit Schedule Update Response (JSON) in SIRI PT format

```json
{
   "Siri": {
      "ServiceDelivery": {
         "ResponseTimestamp": "2013-02-18T09:30:47-08:00",
         "Status": true,
         "ProductionTimetableDelivery": {
            "version": 1.4,
            "ResponseTimestamp": "2004-12-17T09:30:47-05:00",
            "ValidUntil": "2001-12-17T10:30:47-05:00",
            "DatedTimetableVersionFrame": {
               "RecordedAtTime": "2001-12-17T09:30:47-05:00",
               "LineRef": 123,
               "DirectionRef": "Out",
               "PublishedLineName": "String",
               "DatedVehicleJourney": {
                  "DatedVehicleJourneyCode": "DVC0008767",
                  "DatedCalls": {
                     "DatedCall": {
                        "StopPointRef": "BART_11",
                        "CallNote": "optional message here"
                     }
                  }
               }
            }
         }
      }
   }
}
```
"AimedArrivalTime": "2013-02-19T09:55:47-08:00",
"AimedDepartureTime": "2013-02-19T09:56:47-08:00"
}
"StopPointRef": "BART_99",
"CallNote": "optional message here",
"AimedArrivalTime": "2013-02-19T10:15:47-08:00",
"AimedDepartureTime": "2013-02-19T10:16:47-08:00"
}
}
}
}
}

B.1.13 Example Transit Addition and Cancellation of Trip Response (JSON) in SIRI ET format

```json
{
    "Siri": {
        "xmlns": "http://www.siri.org.uk/siri",
        "xmlns:xsi": "http://www.w3.org/2001/XMLSchema-instance",
        "version": 1.4,
        "ServiceDelivery": {
            "ResponseTimestamp": "2013-02-18T09:30:47-08:00",
            "Status": true,
            "EstimatedTimetableDelivery": {
                "version": 1.4,
                "ResponseTimestamp": "2004-12-17T09:30:47-05:00",
                "EstimatedJourneyVersionFrame": {
                    "RecordedAtTime": "2013-02-18T09:30:47-08:00",
                    "EstimatedVehicleJourney": {
                        "LineRef": 917,
                        "DirectionRef": "INBOUND",
                        "DatedVehicleJourneyRef": "00008",
                        "PublishedLineName": "Fremont",
                        "EstimatedCalls": {
                            "EstimatedCall": {
                                "StopPointRef": "BART_11",
                                "CallNote": "optional message here",
                                "AimedArrivalTime": "2013-02-19T09:55:47-08:00",
                                "AimedDepartureTime": "2013-02-19T09:56:47-08:00"
                            }
                        }
                    }
                }
            }
        }
    }
}
```
"LineRef":764,
"DirectionRef": "INBOUND",
"DatedVehicleJourneyRef": "00008",
"Cancellation":true,
"PublishedLineName": "Pittsburgh Bay Point"
}
}
}
}
}

B.1.14 Example Transit General Messaging Service Response (JSON) in SIRI GM format

```json
{
  "Siri":{
    "ResponseTimestamp": "2013-02-17T09:30:46-08:00",
    "Status":true,
    "GeneralMessageDelivery":{
      "version":1.4,
      "ResponseTimestamp": "2001-12-17T09:30:47.0Z",
      "GeneralMessage":[
        {
          "formatRef": "string",
          "RecordedAtTime": "2013-02-17T09:30:46-08:00",
          "InfoMessageIdentifier":12345,
          "InfoMessageVersion":2,
          "InfoChannelRef": "WARNINGS",
          "ValidUntilTime": "2013-02-18T09:30:46-08:00",
          "Content": "some message here"
        },
        {
          "formatRef": "string",
          "RecordedAtTime": "2013-02-17T09:30:46-08:00",
          "InfoMessageIdentifier":23456,
          "InfoMessageVersion":1,
          "InfoChannelRef": "WARNINGS",
          "ValidUntilTime": "2013-02-18T09:30:46-08:00",
          "Content": "some message here"
        }
      ]
    }
  }
}
```
B.1.15 Example GTFS Operator List in JSON format

```
[
  { "Id": "3D",
    "Name": "Tri Delta Transit",
    "LastGenerated": "9/8/2017 5:22:04 PM"
  },
  { "Id": "AC",
    "Name": "AC Transit",
    "LastGenerated": "8/27/2017 6:06:13 PM"
  },
  { "Id": "AM",
    "Name": "Capitol Corridor Joint Powers Authority",
    "LastGenerated": "8/22/2017 11:23:13 AM"
  },
  { "Id": "AT",
    "Name": "Angel Island Tiburon Ferry",
    "LastGenerated": "9/13/2017 12:07:06 PM"
  },
  { "Id": "AY",
    "Name": "American Canyon Transit",
    "LastGenerated": "9/13/2017 12:02:18 PM"
  },
  { "Id": "BA",
    "Name": "BART",
    "LastGenerated": "6/6/2017 1:26:30 PM"
}
```

B.1.16 Example Transit ServiceAlerts Response in JSON format

```
{
  "_header": {
    "_gtfs_realtime_version": "1.0",
    "_incrementality": 0,
    "_timestamp": 636011671937909712
  },
  "_entity": [
    {
      "_id": "10",
      "_is_deleted": false,
      "_trip_update": null,
      "_vehicle": null,
      "_alert": {
        "_active_period": [
          {
            "_start": 1451635200,
            "_end": 1483171200
          }
        ]
      }
    }
  ]
}
```
"informed_entity": [
  {
    "agency_id": "MT",
    "route_id": null,
    "route_type": 0,
    "trip": null,
    "stop_id": null
  }
],
"cause": 10,
"effect": 3,
"url": {
  "translation": [
    {
      "text": "http://mtcexpresslanes.org/projects/express_lanes/projects/i680_contracosta_south.htm",
      "language": "en"
    }
  ],
  "header_text": {
    "translation": [
      {
        "text": "Construction Update: Express Lanes Under Construction",
        "language": "en"
      }
    ],
    "description_text": {
      "translation": [
        {
          "text": "Construction of a portion of the Bay Area Express Lanes began August 2015 and is scheduled to last approximately 15 months on I-680 between Walnut Creek and San Ramon."
        }
      ],
      "language": "en"
    }
  }
}
5  Appendix C: API Data Structures

5.1  SIRI

C.1.8 Announcement Message Structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CreationTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Time of the creation of the situation.</td>
</tr>
<tr>
<td>SituationNumber</td>
<td>Integer</td>
<td>Mandatory</td>
<td>Unique identifier for the situation.</td>
</tr>
<tr>
<td>Source</td>
<td>Container</td>
<td>Mandatory</td>
<td>Information about source of information</td>
</tr>
<tr>
<td>—SourceType</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Nature of source (feed, email, text, etc.)</td>
</tr>
<tr>
<td>—Name</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of source</td>
</tr>
<tr>
<td>ValidityPeriod</td>
<td>Container</td>
<td>Mandatory</td>
<td>It is a container for validity period of the situation</td>
</tr>
<tr>
<td>—StartTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>It is inclusive start time of the situation</td>
</tr>
<tr>
<td>—EndTime</td>
<td>DateTime</td>
<td>Optional</td>
<td>It is inclusive end time stamp for situation. If omitted the situation is interpreted as to be forever.</td>
</tr>
<tr>
<td>Priority</td>
<td>Non Negative Integer</td>
<td>Optional</td>
<td>An arbitrary rating of the situation priority (1=high).</td>
</tr>
<tr>
<td>ScopeType</td>
<td>Enum</td>
<td>Optional</td>
<td>Provides the nature of scope, e.g. general, network etc.</td>
</tr>
<tr>
<td>Summary</td>
<td>Free Text</td>
<td>Optional</td>
<td>It is the summary of situation, id absent it is derived from situation Description</td>
</tr>
<tr>
<td>Description</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Description of the situation</td>
</tr>
<tr>
<td>InfoLinks</td>
<td>Container</td>
<td>Optional</td>
<td>Hyperlinks to other resources associated with situation</td>
</tr>
<tr>
<td>—InfoLink</td>
<td>Container</td>
<td>Mandatory</td>
<td>It is container for the hyperlink associated with situation</td>
</tr>
<tr>
<td>—Uri</td>
<td>Link</td>
<td>Mandatory</td>
<td>Hyperlink associated with situation</td>
</tr>
<tr>
<td>Consequences</td>
<td>Container</td>
<td>Mandatory</td>
<td>It is the collection of consequence (SIRI element) which describes effect of the situation on Public Transport system. It has at least one consequence</td>
</tr>
</tbody>
</table>

**Consequence structure**

The Consequence structure is the main element of the Consequences collection. It contains information about the nature of the effect or disrupt on to the public transport service.
### Severity
- **Enum**
- **Mandatory**
  - Severity of disruption, it could be different from that of situation

### Affects
- **Free Text**
- **Optional**
  - Description about parts of transport network affected by situation.

#### Operators
- **Container**
- **Mandatory**
  - Container for collection of affected operators. It has one or more AffectedOperator

#### AffectedOperator
- **Container**
- **Mandatory**
  - Container for operators affected by the situation

#### OperatorRef
- **Ref**
- **Mandatory**
  - Contains reference to operator affected by situation

#### OperatorName
- **Free Text**
- **Mandatory**
  - Public name of the affected operator

#### Networks
- **Container**
- **Mandatory**
  - Container for collection of affected Network. It has one or more AffectedOperator

#### AffectedNetwork
- **Container**
- **Mandatory**
  - Contains network or Route(s) affected by situation

#### AffectedLine
- **Container**
- **Mandatory**
  - Information about the individual lines in the network that are affected. Contains one or more LineRef sub elements

#### LineRef
- **Ref**
- **Mandatory**
  - Contains reference to Line affected by situation

#### StopPoints
- **Container**
- **Optional**
  - Container for collection of affected StopPoints. It has one or more AffectedStopPoint

#### AffectedStopPoint
- **Container**
- **Mandatory**
  - Container for StopPoints affected by the situation

#### StopPointRef
- **Ref**
- **Mandatory**
  - Contains reference to StopPoint affected by situation

### C.1.9 Transit Scheduled Departures for a Stop Message Structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td><strong>Mandatory</strong></td>
<td>Timestamp of server response.</td>
</tr>
<tr>
<td>Status</td>
<td>Enum</td>
<td>Optional</td>
<td>Indicates success or failure of request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>true</em> - success</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>false</em> - failure, SIRI error response will be returned</td>
</tr>
<tr>
<td>StopTimetableDelivery</td>
<td>Object</td>
<td><strong>Mandatory</strong></td>
<td>Contains multiple TimetabledStopVisit nodes, one for each visit to the stop within the Departure window.</td>
</tr>
</tbody>
</table>

StopTimetableDelivery structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td><strong>Mandatory</strong></td>
<td>Timestamp of server response.</td>
</tr>
</tbody>
</table>
SubscriptionRef | Xsd:NMTtoken | Mandatory | Identifier of service subscription- unique within Service and Subscriber
TimetabledStopVisit | Object | Mandatory | A visit to a stop by a vehicle in the production timetable

TimetabledStopVisit structure
This contains details on a single visit to the stop within the Departure window.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>Date Time</td>
<td>Mandatory</td>
<td>Date and time when data was recorded.</td>
</tr>
<tr>
<td>MonitoringRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Identifier of stop monitoring point that Stop Visit applies.</td>
</tr>
<tr>
<td>TargetedVehicleJourney</td>
<td>Object</td>
<td>Mandatory</td>
<td>Contains a single TargetedVehicleJourney node.</td>
</tr>
</tbody>
</table>

TargetedVehicleJourney structure
This contains details on a single visit to the stop within the Departure window.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>A Line in SIRI is equivalent to a Route in GTFS. Value is RouteCode e.g.: &quot;917&quot; = &quot;Fremont&quot; for &quot;BA&quot; agency.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Value could be either INBOUND or OUTBOUND etc.</td>
</tr>
<tr>
<td>FramedVehicleJourneyRef</td>
<td>Object</td>
<td>Optional</td>
<td>A compound element uniquely identifying the trip the vehicle is serving.</td>
</tr>
<tr>
<td>PublishedLineName</td>
<td>Free Text</td>
<td>Optional</td>
<td>Value is Route Name e.g.: &quot;Fremont&quot; for &quot;BA&quot; agency.</td>
</tr>
<tr>
<td>OperatorRef</td>
<td>Reference ID</td>
<td>Optional</td>
<td>Operator of the journey</td>
</tr>
<tr>
<td>OriginRef</td>
<td>Computed Text</td>
<td>Optional</td>
<td>The stop ID for the first stop on the trip the vehicle is serving, prefixed by Agency Name and or Route Name to make it unique e.g.: &quot;BART_11&quot;.</td>
</tr>
</tbody>
</table>
**OriginName**  
Free Text  
**Optional**  
The stop Name for the first stop on the trip the vehicle is serving, prefixed by Agency Name e.g.: “BART_CIVIC CENTER”.

**DestinationRef**  
Computed Text  
**Optional**  
The stop ID for the last stop on the trip the vehicle is serving, prefixed by Agency Name e.g.: “BART_99”.

**DestinationName**  
Free Text  
**Optional**  
The stop Name for the last stop on the trip the vehicle is serving, prefixed by Agency Name e.g.: “BART_16th St-Mission”.

**VehicleJourneyName**  
Free Text  
**Optional**  
The trip headsign corresponding to the trip (journey) the vehicle is serving.

**TargetedCall**  
Object  
**Optional**  
Contains a single TargetedCall node.

**FramedVehicleJourneyRef Structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DataFrameRef</td>
<td>Date time</td>
<td><strong>Mandatory</strong></td>
<td>The service date for the trip the vehicle is serving.</td>
</tr>
<tr>
<td>DatedVehicleJourneyRef</td>
<td>Free Text</td>
<td><strong>Mandatory</strong></td>
<td>The trip ID for trip the vehicle is serving</td>
</tr>
</tbody>
</table>

**TargetedCall structure**

This describes the arrival and departure times for a specific visit.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VisitNumber</td>
<td>Numeric</td>
<td><strong>Mandatory</strong></td>
<td>For journey patterns that involve repeated visits by a vehicle to a stop, the VisitNumber count is used to distinguish each separate visit.</td>
</tr>
<tr>
<td>AimedArrivalTime</td>
<td>DateTime</td>
<td><strong>Mandatory</strong></td>
<td>Value is expected arrival time.</td>
</tr>
<tr>
<td>AimedDepartureTime</td>
<td>DateTime</td>
<td><strong>Mandatory</strong></td>
<td>Value is expected departure time.</td>
</tr>
</tbody>
</table>

**C.1.10 Real-time predictions at a Stop Message Structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td><strong>Mandatory</strong></td>
<td>Timestamp of response from server.</td>
</tr>
</tbody>
</table>
### Status

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Indicates success or failure of request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>true</strong> - success</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>false</strong> - failure, SIRI error response will be returned</td>
</tr>
</tbody>
</table>

### StopMonitoringDelivery

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StopMonitoringDelivery</td>
<td>Object</td>
<td>Mandatory</td>
<td>Contains multiple <strong>MonitoredStopVisit</strong> entries, one per visit to the stop.</td>
</tr>
</tbody>
</table>

### StopMonitoringDelivery structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MonitoredStopVisit</td>
<td>Object</td>
<td>Required</td>
<td>This contains monitored vehicle journey (real-time trip) information.</td>
</tr>
<tr>
<td>MonitoredStopVisitCancellation</td>
<td>Object</td>
<td>Optional</td>
<td>This contains cancellation information for a trip.</td>
</tr>
<tr>
<td>StopLineNotice</td>
<td>Object</td>
<td>Optional</td>
<td>This provides notices for lines serving this monitored stop.</td>
</tr>
<tr>
<td>StopLineNoticeCancellation</td>
<td>Object</td>
<td>Optional</td>
<td>This provides cancellation of previous issued notices for lines serving this monitored stop.</td>
</tr>
</tbody>
</table>

### MonitoredStopVisit structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Required</td>
<td>The timestamp of the last real-time update from the particular vehicle.</td>
</tr>
<tr>
<td>MonitoringRef</td>
<td>Free Text</td>
<td>Optional</td>
<td>Name of the Stop being monitored</td>
</tr>
<tr>
<td>MonitoredVehicleJourney</td>
<td>Object</td>
<td>Optional</td>
<td>Real-time information about particular vehicles</td>
</tr>
</tbody>
</table>

### MonitoredVehicleJourney structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OperatorRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td><strong>For AgencyCode requirement</strong>, e.g.: “BA”.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Could be moved under sub-node Extensions because it’s NOT part of the SIRI spec.</td>
</tr>
</tbody>
</table>
### Table: Transit Data Elements

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For Route Code requirement. A Line in SIRI is equivalent to a Route in GTFS. Value could either be RouteCode or RouteName as required. Recommend using RouteCode because &quot;PublishedLineName&quot; is using RouteName. e.g.: RouteCode &quot;917&quot; = RouteName &quot;Fremont&quot; for BART. Does not identify the Agency, so RouteCode or RouteName would have to be unique to an Agency.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Defined Text</td>
<td>Mandatory</td>
<td>For Direction requirement. E.g.: “Inbound”</td>
</tr>
<tr>
<td>FramedVehicleJourneyRef</td>
<td>Object</td>
<td>Mandatory</td>
<td>A compound element uniquely identifying the trip the vehicle is serving.</td>
</tr>
<tr>
<td>PublishedLineName</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For Route name requirement.</td>
</tr>
<tr>
<td>OriginRef</td>
<td>Computed Text</td>
<td>Optional</td>
<td>&quot;The GTFS stop code or stop ID for the first stop on the trip the vehicle is serving.&quot; e.g.: &quot;DALY&quot;.</td>
</tr>
<tr>
<td>OriginName</td>
<td>Free Text</td>
<td>Optional</td>
<td>For Origin place name requirement. &quot;The GTFS stop Name for the first stop on the trip the vehicle is serving.&quot; e.g.: &quot;Daly City BART Station&quot;.</td>
</tr>
<tr>
<td>DestinationRef</td>
<td>Computed Text</td>
<td>Optional</td>
<td>&quot;The GTFS stop code or stop ID for the last stop on the trip the vehicle is serving, prefixed by Agency ID.&quot; e.g.: &quot;WARM&quot;.</td>
</tr>
<tr>
<td>DestinationName</td>
<td>Free Text</td>
<td>Optional</td>
<td>For Destination place name requirement. &quot;The trip head sign, if available. If not, GTFS stop Name for the last stop on the trip the vehicle is serving.&quot; e.g.: &quot;Warm Springs/South Fremont&quot;.</td>
</tr>
<tr>
<td>Monitored</td>
<td>Boolean</td>
<td>Mandatory</td>
<td>True if the trip is monitored.</td>
</tr>
<tr>
<td>InCongestion</td>
<td>Boolean</td>
<td>Optional</td>
<td>Indicates the congestion level affecting the vehicle. Set to true if the agency provides the congestion.</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Mandatory/Optional</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>level as STOP_AND_GO, CONGESTION or SEVERE_CONGESTION. Set to false if agency provides the congestion level as RUNNING_SMOOTHLY.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearing</td>
<td>Float</td>
<td>Optional</td>
<td>When data is available, this field provides values in degrees, clockwise from True North, i.e., 0 is North and 90 is East.</td>
</tr>
<tr>
<td>Occupancy</td>
<td>Enum</td>
<td>Optional</td>
<td>When data is available this field provides level of passenger occupancy in the vehicle - full, seatsAvailable, standingAvailable</td>
</tr>
<tr>
<td>VehicleRef</td>
<td>Free Text</td>
<td>Optional</td>
<td>Vehicle Identifier. Internal system identification of the vehicle. Should be unique per vehicle (for a given operator) and is used for tracking the vehicle as it proceeds through the system.</td>
</tr>
<tr>
<td>MonitoredCall</td>
<td>Object</td>
<td>Mandatory</td>
<td>Call data for the stop</td>
</tr>
<tr>
<td>OnwardsCalls</td>
<td>Object</td>
<td>Optional</td>
<td>Call data for next stops</td>
</tr>
<tr>
<td>PreviousCalls</td>
<td>Object</td>
<td>Optional</td>
<td>Call data for previous stops</td>
</tr>
<tr>
<td>ProgressStatus</td>
<td>Enum</td>
<td>Optional</td>
<td>Status of the current vehicle, On-time, Running early etc.</td>
</tr>
<tr>
<td>VehicleLocation</td>
<td>Object</td>
<td>Optional</td>
<td>Vehicle location information. (Latitude/Longitude)</td>
</tr>
</tbody>
</table>

**FramedVehicleJourneyRef Structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DataFrameRef</td>
<td>Date time</td>
<td>Mandatory</td>
<td>The service date for the trip the vehicle is serving.</td>
</tr>
<tr>
<td>DatedVehicleJourneyRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>The trip ID for trip the vehicle is serving.</td>
</tr>
</tbody>
</table>

**Monitored/Onward/Previous Call structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StopPointRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Regional stop identifier of the stop that is being monitored.</td>
</tr>
</tbody>
</table>
### StopPointName
- **Type**: Free Text
- **Mandatory**: Mandatory
- **Description**: Name of the stop

### VehicleLocationAtStop
- **Type**: Object
- **Mandatory**: Optional
- **Description**: Vehicle location information at stop. (Latitude/Longitude)

### VehicleAtStop
- **Type**: Boolean
- **Mandatory**: Mandatory
- **Description**: True if vehicle is at the stop.

### AimedArrivalTime
- **Type**: DateTime
- **Mandatory**: Mandatory
- **Description**: Scheduled arrival time requirement.

### ExpectedArrivalTime
- **Type**: DateTime
- **Mandatory**: Mandatory
- **Description**: Predicted arrival time requirement.

### AimedDepartureTime
- **Type**: DateTime
- **Mandatory**: Mandatory
- **Description**: Scheduled departure time requirement.

### ExpectedDepartureTime
- **Type**: DateTime
- **Mandatory**: Mandatory
- **Description**: Predicted departure time requirement.

### Distances
- **Type**: Object
- **Mandatory**: Optional
- **Description**: Extension to SIRI Call structure to incorporate distance and bearing information of vehicle from the stop.

#### Distances structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CallDistanceAlongRoute</td>
<td>Numeric</td>
<td>Optional</td>
<td>Distance of the stop from the beginning of the trip/route</td>
</tr>
<tr>
<td>DistanceFromCall</td>
<td>Numeric</td>
<td>Optional</td>
<td>Distance from the vehicle to the stop along the route, in meters</td>
</tr>
<tr>
<td>StopsFromCall</td>
<td>Numeric</td>
<td>Optional</td>
<td>The number of stops on the vehicle’s current trip until the stop in question, starting from 0.</td>
</tr>
<tr>
<td>PresentableDistance</td>
<td>Text</td>
<td>Optional</td>
<td>Suggested display for the distance of vehicle from the stop.</td>
</tr>
</tbody>
</table>

#### MonitoredStopVisitCancellation structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>The timestamp of the last real-time update from the particular vehicle.</td>
</tr>
<tr>
<td>MonitoringRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Name of the Stop being monitored</td>
</tr>
</tbody>
</table>
### StopLineNotice structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>The timestamp of the last real-time update from the particular vehicle.</td>
</tr>
<tr>
<td>ItemRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Reference to a previously issued notice.</td>
</tr>
<tr>
<td>MonitoringRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Name of the Stop being monitored</td>
</tr>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For Route Code requirement. A Line in SIRI is equivalent to a Route in GTFS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Value could either be RouteCode or RouteName as required. Recommend using RouteCode because &quot;PublishedLineName&quot; is using RouteName.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>e.g.: RouteCode &quot;917&quot; = RouteName &quot;Fremont&quot; for BART.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Does not identify the Agency, so RouteCode or RouteName would have to be unique to an Agency.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Defined Text</td>
<td>Mandatory</td>
<td>For Direction requirement. &quot;In&quot; = inbound, &quot;Out&quot; = outbound</td>
</tr>
<tr>
<td>Note</td>
<td>Free Text</td>
<td>Optional</td>
<td>Note about the cancellation.</td>
</tr>
</tbody>
</table>

### StopLineNoticeCancellation structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>The timestamp of the last real-time update from the particular vehicle.</td>
</tr>
<tr>
<td>ItemIdentifier</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Unique identifier for this notice</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Mandatory/Optional</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MonitoringRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Name of the Stop being monitored</td>
</tr>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For Route Code requirement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A Line in SIRI is equivalent to a Route in GTFS.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Value could either be RouteCode or RouteName as required. Recommend using</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RouteCode because &quot;PublishedLineName&quot; is using RouteName.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>e.g.: RouteCode &quot;917&quot; = RouteName &quot;Fremont&quot; for BART.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Does not identify the Agency, so RouteCode or RouteName would have to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>unique to an Agency.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Defined Text</td>
<td>Mandatory</td>
<td>For Direction requirement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;In&quot; = inbound, &quot;Out&quot; = outbound</td>
</tr>
<tr>
<td>LineNote</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Information about the notice.</td>
</tr>
</tbody>
</table>

C.1.11 Real-time Vehicle Monitoring Message Structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Timestamp of response from server.</td>
</tr>
<tr>
<td>Status</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Indicates success or failure of request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>true - success</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>false- failure, SIRI error response will be returned</td>
</tr>
<tr>
<td>VehicleMonitoringDelivery</td>
<td>Object</td>
<td>Mandatory</td>
<td>Contains multiple VehicleActivity entries, one per trip, if monitored.</td>
</tr>
</tbody>
</table>

VehicleMonitoringDelivery structure
### VehicleActivity

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VehicleActivity</td>
<td>Object</td>
<td>Required</td>
<td>This contains monitored vehicle journey (real-time trip) information.</td>
</tr>
<tr>
<td>VehicleActivityCancellation</td>
<td>Object</td>
<td>Optional</td>
<td>This contains cancellation information for a trip.</td>
</tr>
</tbody>
</table>

### VehicleActivity structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Required</td>
<td>The timestamp of the last real-time update from the particular vehicle.</td>
</tr>
<tr>
<td>ValidUntilTime</td>
<td>DateTime</td>
<td>Required</td>
<td>Time until which data is valid.</td>
</tr>
</tbody>
</table>

### MonitoredVehicleJourney

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MonitoredVehicleJourney</td>
<td>Object</td>
<td>Optional</td>
<td>Real-time information about particular vehicles</td>
</tr>
</tbody>
</table>

### MonitoredVehicleJourney structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OperatorRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For AgencyCode requirement, e.g.: “BA”.</td>
</tr>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For Route Code requirement.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Defined Text</td>
<td>Mandatory</td>
<td>For Direction requirement.</td>
</tr>
</tbody>
</table>

- OperatorRef: Could be moved under sub-node Extensions because it’s NOT part of the SIRI spec.
- LineRef: A Line in SIRI is equivalent to a Route in GTFS.
- DirectionRef: E.g.: “Inbound”
<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Mandatory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FramedVehicleJourneyRef</td>
<td>Object</td>
<td>Mandatory</td>
<td>A compound element uniquely identifying the trip the vehicle is serving.</td>
</tr>
<tr>
<td>PublishedLineName</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>For Route name requirement.</td>
</tr>
<tr>
<td>OriginRef</td>
<td>Computed Text</td>
<td>Optional</td>
<td>&quot;The GTFS stop code or stop ID for the first stop on the trip the vehicle is serving, prefixed by Agency ID.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>e.g.: &quot;DALY&quot;</td>
</tr>
<tr>
<td>OriginName</td>
<td>Free Text</td>
<td>Optional</td>
<td>For Origin place name requirement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;The GTFS stop Name for the first stop on the trip the vehicle is serving.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>We don't have an Agency ID, so would use Agency Name e.g.: &quot;Daly City BART Station&quot;</td>
</tr>
<tr>
<td>DestinationRef</td>
<td>Computed Text</td>
<td>Optional</td>
<td>&quot;The GTFS stop code or stop ID for the last stop on the trip the vehicle is serving, prefixed by Agency ID.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>e.g.: &quot;WARM&quot;</td>
</tr>
<tr>
<td>DestinationName</td>
<td>Free Text</td>
<td>Optional</td>
<td>For Destination place name requirement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;The trip head sign, if available. If not, GTFS stop Name for the last stop on the trip the vehicle is serving.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>e.g.: &quot;Warm Springs/South Fremont&quot;</td>
</tr>
<tr>
<td>Monitored</td>
<td>Boolean</td>
<td>Mandatory</td>
<td>True if the trip is monitored for real-time updates.</td>
</tr>
<tr>
<td>InCongestion</td>
<td>Boolean</td>
<td>Optional</td>
<td>Indicates the congestion level affecting the vehicle. Set to true if the agency provides the congestion level as STOP_AND.GO, CONGESTION or SEVERE_CONGESTION.  Set to false if agency provides the congestion level as RUNNING_SMOOTHLY</td>
</tr>
<tr>
<td>Bearing</td>
<td>Float</td>
<td>Optional</td>
<td>When data is available, this field provides values in degrees, clockwise from True North, i.e., 0 is North and 90 is East.</td>
</tr>
<tr>
<td>Occupancy</td>
<td>Enum</td>
<td>Optional</td>
<td>When data is available this field provides level of passenger occupancy in the vehicle - full, seatsAvailable, standingAvailable</td>
</tr>
<tr>
<td>MonitoredCall</td>
<td>Object</td>
<td>Optional</td>
<td>Call data for the current stop</td>
</tr>
<tr>
<td>OnwardsCalls</td>
<td>Object</td>
<td>Optional</td>
<td>Call data for next stops</td>
</tr>
<tr>
<td>PreviousCalls</td>
<td>Object</td>
<td>Optional</td>
<td>Call data for previous stops</td>
</tr>
<tr>
<td>ProgressStatus</td>
<td>Enum</td>
<td>Optional</td>
<td>Status of the current vehicle, On-time, Running early etc.</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Mandatory / Optional</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>VehicleRef</td>
<td>Free Text</td>
<td>Optional</td>
<td>The unique identifier of the vehicle to be monitored.</td>
</tr>
<tr>
<td>VehicleLocation</td>
<td>Object</td>
<td>Optional</td>
<td>Vehicle location information. (Latitude/Longitude)</td>
</tr>
</tbody>
</table>

**FramedVehicleJourneyRef Structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DataFrameRef</td>
<td>Date time</td>
<td>Mandatory</td>
<td>The service date for the trip the vehicle is serving.</td>
</tr>
<tr>
<td>DatedVehicleJourneyRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>The trip ID for trip the vehicle is serving.</td>
</tr>
</tbody>
</table>

**Monitored/Onward/Previous Call structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory / Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StopPointRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Stop code or stop ID.</td>
</tr>
<tr>
<td>StopPointName</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Name of the stop</td>
</tr>
<tr>
<td>VehicleLocationAtStop</td>
<td>Object</td>
<td>Optional</td>
<td>Vehicle location information at stop. (Latitude/Longitude)</td>
</tr>
<tr>
<td>VehicleAtStop</td>
<td>Boolean</td>
<td>Optional</td>
<td>True if vehicle is at the stop.</td>
</tr>
<tr>
<td>AimedArrivalTime</td>
<td>DateTime</td>
<td>Optional</td>
<td>Scheduled arrival time requirement.</td>
</tr>
<tr>
<td>ExpectedArrivalTime</td>
<td>DateTime</td>
<td>Optional</td>
<td>Predicted arrival time requirement.</td>
</tr>
<tr>
<td>ActualArrivalTime</td>
<td>Date Time</td>
<td>Optional</td>
<td>Observed arrival time.</td>
</tr>
<tr>
<td>AimedDepartureTime</td>
<td>DateTime</td>
<td>Optional</td>
<td>Scheduled departure time requirement.</td>
</tr>
<tr>
<td>ExpectedDepartureTime</td>
<td>DateTime</td>
<td>Optional</td>
<td>Predicted departure time requirement.</td>
</tr>
<tr>
<td>ActualDepartureTime</td>
<td>Date Time</td>
<td>Optional</td>
<td>Observed departure time.</td>
</tr>
<tr>
<td>Distances</td>
<td>Object</td>
<td>Optional</td>
<td>Extension to SIRI Call structure to incorporate distance and bearing information of vehicle from the stop.</td>
</tr>
</tbody>
</table>

**Distances structure**
<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CallDistanceAlongRoute</td>
<td>Numeric</td>
<td>Optional</td>
<td>Distance of the stop from the beginning of the trip/route</td>
</tr>
<tr>
<td>DistanceFromCall</td>
<td>Numeric</td>
<td>Optional</td>
<td>Distance from the vehicle to the stop along the route, in meters</td>
</tr>
<tr>
<td>StopsFromCall</td>
<td>Numeric</td>
<td>Optional</td>
<td>The number of stops on the vehicle's current trip until the stop in question, starting from 0.</td>
</tr>
<tr>
<td>PresentableDistance</td>
<td>Text</td>
<td>Optional</td>
<td>Suggested display for the distance of vehicle from the stop.</td>
</tr>
</tbody>
</table>

**VehicleActivityCancellation structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>Date Time</td>
<td>Mandatory</td>
<td>The timestamp when data was recorded.</td>
</tr>
<tr>
<td>VehicleJourneyRef</td>
<td>Object</td>
<td>Mandatory</td>
<td>A compound element uniquely identifying the trip the vehicle is serving.</td>
</tr>
</tbody>
</table>
| LineRef               | Free Text| Mandatory         | *For Route Code requirement.*  
  A Line in SIRI is equivalent to a Route in GTFS.  
  Value could either be RouteCode or RouteName as required.  
  Recommend using RouteCode because "PublishedLineName" is using RouteName.  
  e.g.: RouteCode "917" = RouteName "Fremont" for BART.  
  Does not identify the Agency, so RouteCode or RouteName would have to be unique to an Agency. |
| DirectionRef          | Defined Text | Mandatory          | *For Direction requirement.*  
  “In” =inbound, “Out” = outbound |
| Reason                | Free Text | Mandatory         | Reason for cancellation of this trip. For e.g. Vehicle has completed all its journeys. |

**C.1.12 Transit Schedule Updates for an agency Message Structure**
### ProductionTimetableDelivery specification

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Timestamp of server response.</td>
</tr>
<tr>
<td>Status</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Indicates success or failure of request. true - success; false- failure, SIRI error response will be returned.</td>
</tr>
<tr>
<td>ProductionTimetableDelivery</td>
<td>Object</td>
<td>Mandatory</td>
<td>Contains multiple DatedTimetableVersionFrame nodes.</td>
</tr>
</tbody>
</table>

**ProductionTimetableDelivery structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Timestamp of server response.</td>
</tr>
<tr>
<td>DatedTimetableVersionFrame</td>
<td>Object</td>
<td>Mandatory</td>
<td>A timetable to run on a specific date</td>
</tr>
</tbody>
</table>

**DatedTimetableVersionFrame structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Date and time when data was recorded.</td>
</tr>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>A Line in SIRI is equivalent to a Route in GTFS. Value is RouteCode e.g.: &quot;917&quot; = &quot;Fremont&quot; for &quot;BART&quot; agency.</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Value is either INBOUND or OUTBOUND</td>
</tr>
<tr>
<td>PublishedLineName</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Value is Route Name e.g.: &quot;Fremont&quot; for &quot;BART&quot; agency.</td>
</tr>
<tr>
<td>LineNote</td>
<td>Free Text</td>
<td>Optional</td>
<td>Text message describing this change.</td>
</tr>
<tr>
<td>DatedVehicleJourney</td>
<td>Object</td>
<td>Mandatory</td>
<td>Contains a DatedVehicleJourney node.</td>
</tr>
</tbody>
</table>

**DatedVehicleJourney structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DatedVehicleJourneyCode</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Identifies the vehicle journey (Tripid).</td>
</tr>
<tr>
<td>DatedCalls</td>
<td>Objects</td>
<td>Mandatory</td>
<td>May contain multiple DatedCall nodes.</td>
</tr>
</tbody>
</table>
### DatedCall structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StopPointRef</td>
<td>Numeric</td>
<td>Mandatory</td>
<td>The GTFS stop ID for this stop on the trip the vehicle is serving, prefixed by Agency Name e.g.: &quot;BART_11&quot;.</td>
</tr>
<tr>
<td>AimedArrivalTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Value is expected arrival time.</td>
</tr>
<tr>
<td>AimedDepartureTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Value is expected departure time.</td>
</tr>
<tr>
<td>CallNote</td>
<td>Text</td>
<td>Optional</td>
<td>Text message describing this change.</td>
</tr>
</tbody>
</table>

### C.1.13 Transit Addition and Cancellation of Trips by Agency Message Structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Timestamp of server response.</td>
</tr>
<tr>
<td>Status</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Indicates success or failure of request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>true - success</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>false- failure, SIRI error response will be returned</td>
</tr>
<tr>
<td>EstimatedTimetableDelivery</td>
<td>Object</td>
<td>Mandatory</td>
<td>Contains multiple EstimatedJourneyVersionFrame node.</td>
</tr>
</tbody>
</table>

#### EstimatedJourneyVersionFrame structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Date and time when data was recorded.</td>
</tr>
<tr>
<td>EstimatedVehicleJourney</td>
<td>Object</td>
<td>Mandatory</td>
<td>May contain multiple EstimatedVehicleJourney nodes, one for each vehicle.</td>
</tr>
</tbody>
</table>

#### EstimatedVehicleJourney structure

Provides real-time information about a journey along which a vehicle is running.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LineRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>A Line in SIRI is equivalent to a Route in GTFS. Value is RouteCode e.g.: &quot;917&quot; = &quot;Fremont&quot; for “BART” agency.</td>
</tr>
<tr>
<td>Field</td>
<td>Type</td>
<td>Mandatory/Optional</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>DirectionRef</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Value is either INBOUND or OUTBOUND</td>
</tr>
<tr>
<td>DatedVehicleJourneyRef</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Reference to a dated vehicle journey or trip.</td>
</tr>
<tr>
<td>Cancellation</td>
<td>Enum</td>
<td>Optional</td>
<td>Value is “true” if cancelled.</td>
</tr>
<tr>
<td>PublishedLineName</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Value is Route Name e.g.: “Fremont” for “BART” agency.</td>
</tr>
<tr>
<td>EstimatedCalls</td>
<td>Objects</td>
<td>Mandatory</td>
<td>May contain multiple EstimatedCall nodes. Not returned if journey is cancelled.</td>
</tr>
</tbody>
</table>

**EstimatedCall structure**

This describes the times at a stop. A journey must contain at least two calls.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StopPointRef</td>
<td>Numeric</td>
<td>Mandatory</td>
<td>The GTFS stop ID for this stop on the trip the vehicle is serving, prefixed by Agency Name e.g.: &quot;BART_11&quot;.</td>
</tr>
<tr>
<td>AimedArrivalTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Value is expected arrival time.</td>
</tr>
<tr>
<td>AimedDepartureTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Value is expected departure time.</td>
</tr>
<tr>
<td>CallNote</td>
<td>Text</td>
<td>Optional</td>
<td>Text message describing the update.</td>
</tr>
</tbody>
</table>

**C.1.14 General Announcements Message Structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Timestamp of server response.</td>
</tr>
<tr>
<td>Status</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Indicates success or failure of request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>true - success</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>false- failure, SIRI error response will be returned</td>
</tr>
<tr>
<td>GeneralMessageDelivery</td>
<td>Object</td>
<td>Mandatory</td>
<td>May contain multiple GeneralMessage nodes.</td>
</tr>
</tbody>
</table>

**GeneralMessageDelivery structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ResponseTimestamp</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Date and time when message was recorded.</td>
</tr>
<tr>
<td>GeneralMessage</td>
<td>Object</td>
<td>Optional</td>
<td>A message from an agency.</td>
</tr>
</tbody>
</table>
GeneralMessage structure

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecordedAtTime</td>
<td>DateTime</td>
<td>Mandatory</td>
<td>Date and time when message was recorded.</td>
</tr>
<tr>
<td>InfoMessageIdentifier</td>
<td>String</td>
<td>Optional</td>
<td>Unique identifier of this message.</td>
</tr>
<tr>
<td>InfoMessageVersion</td>
<td>Int</td>
<td>Optional</td>
<td>Version number of this message.</td>
</tr>
<tr>
<td>InfoChannelRef</td>
<td>Text</td>
<td>Optional</td>
<td>Information channel to which message belongs.</td>
</tr>
<tr>
<td>ValidUntilTime</td>
<td>DateTime</td>
<td>Optional</td>
<td>Date and time of message expiration. If not provided, message is open-ended.</td>
</tr>
<tr>
<td>Content</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Text message.</td>
</tr>
</tbody>
</table>

C.1.15 ServiceAlerts Structure

Described in the Google documentation at:

https://developers.google.com/transit/gtfs-realtime/service-alerts

https://developers.google.com/transit/gtfs-realtime/examples/alerts
# 6 Appendix D: GTFS+ Files Structures

## D.1.1 directions.txt File Structure
This file contains descriptions for each of the direction_ids provided for a route in the GTFS trips.txt file.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route_id</td>
<td>Text</td>
<td>Mandatory</td>
<td>From GTFS routes.txt file.</td>
</tr>
<tr>
<td>Direction_id</td>
<td>Numeric</td>
<td>Mandatory</td>
<td>Binary direction_id from GTFS trips.txt file. Each (route_id, direction_id) pair is unique in directions.txt.</td>
</tr>
<tr>
<td>Direction</td>
<td>Text</td>
<td>Mandatory</td>
<td>Corresponding direction name. Following are the values for direction: North South East West Northeast Northwest Southeast Southwest Clockwise Counterclockwise Inbound Outbound Loop A Loop B Loop</td>
</tr>
</tbody>
</table>

## D.1.2 calendar_attributes.txt File Structure
This file contains descriptions for each of the service_ids provided in the GTFS calendar.txt file.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service_id</td>
<td>Text</td>
<td>Mandatory</td>
<td>From GTFS calendar.txt file.</td>
</tr>
<tr>
<td>Service_description</td>
<td>Text</td>
<td>Mandatory</td>
<td>Description of the service. For example, Weekdays, Sunday/Holiday, etc.</td>
</tr>
</tbody>
</table>

## D.1.3 farezone_attributes.txt File Structure
This file contains zone names for each of the zone_ids provided in the GTFS stops.txt file.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone_id</td>
<td>Text</td>
<td>Mandatory</td>
<td>From GTFS stops.txt file.</td>
</tr>
</tbody>
</table>
D.1.4 rider_categories.txt File Structure
The GTFS fare_attributes.txt file provides the fares for the regular adult fare category only. This file lists the other rider categories that the agency may define for discounted fares.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rider_category_id</td>
<td>Numeric</td>
<td>Mandatory</td>
<td>Unique rider category ID. Values are: 2 - Senior, 3 - Child, 4 - Student, 5 – Youth, 6 - Disabled, 7 – Promotional category, 11 – Military, 15 to 25 – Custom categories defined by the agency.</td>
</tr>
<tr>
<td>Rider_category_description</td>
<td>Text</td>
<td>Mandatory</td>
<td>Rider category description, such as Child (ages 5-11), Seniors (Ages 62 &amp; Up).</td>
</tr>
</tbody>
</table>

D.1.5 fare_rider_categories.txt File Structure
GTFS file fare_attributes.txt contains the fares for the regular adult rider category. Fares for other rider categories defined in the rider_categories.txt file above such as Child, Senior, etc will be provided in this GTFS+ file. The combination of fare_id and rider_category_id will be unique in this file.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/ Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fare_id</td>
<td>Text</td>
<td>Mandatory</td>
<td>From GTFS fare_attributes.txt file.</td>
</tr>
<tr>
<td>Rider_category_id</td>
<td>Numeric</td>
<td>Mandatory</td>
<td>From GTFS+ file rider_categories.txt.</td>
</tr>
<tr>
<td>Price</td>
<td>Decimal</td>
<td>Mandatory</td>
<td>Fare for the specified fare_id and rider_category_id in USD.</td>
</tr>
</tbody>
</table>