511 Data Exchange including an Open511 Protocol

Traffic Event
# Table of Contents

1  Overview .................................................................................................................................................................... 2  
2  Traffic API ................................................................................................................................................................... 2  
   2.1  API: Event .......................................................................................................................................................... 2  
3  Appendix A: API Response Messages- XML .................................................................................................... 14  
   3.1  Traffic XML ..................................................................................................................................................... 14  
4  Appendix B: API Response Messages- JSON ................................................................................................... 17  
   4.1  Traffic JSON ................................................................................................................................................... 17
**List of Tables**

A.1.1 Example Traffic Event Structure Response (XML) ............................................................................................... 14
B.1.1 Example Traffic Event Structure Response (JSON) .............................................................................................. 17
## 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>Split API specification document into sub docs for each API domain</td>
<td>1.0</td>
<td>8/26/2014</td>
</tr>
<tr>
<td>Minor updates to remove Transit references</td>
<td>1.0</td>
<td>9/24/2014</td>
</tr>
<tr>
<td>Removed APIs that are not planned to be developed</td>
<td>1.0</td>
<td>08/01/2017</td>
</tr>
<tr>
<td>Updated to add road closure polyline</td>
<td>1.1</td>
<td>08/19/2018</td>
</tr>
<tr>
<td>Updated to include splitting longer geometries into multiple 100 point Linestring.</td>
<td>1.2</td>
<td>11/01/2018</td>
</tr>
<tr>
<td>Updated to reflect that Linestring will always be 100 points in length and won’t be controlled by an API parameter.</td>
<td>1.3</td>
<td>02/25/2018</td>
</tr>
</tbody>
</table>
1 Overview

This document focuses on data exchange APIs for the traffic event 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 review the information in the Overview document.

2 Traffic API

The core traffic data resources consist of traffic events. Open511 provides message structure and API endpoint for accessing these resources. Open511 will also provide metadata/lookup information that can be used by consumers to filter and limit information during requests.

2.1 API: Event

The event resource provides information about various types of events within a jurisdiction. These can be active incident, scheduled construction/roadway work or public events which may or may not have an impact on traffic conditions. Consumers can request list of all the active events or they can use additional filters such as city, roads to restrict the results as per their needs and use case.

The event structure is the main element of the events collection. Although an event should be considered as independent, it is possible that one major event (mainly construction) could be split across several events. Below is a message structure of Event.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>Link</td>
<td>Mandatory</td>
<td>Self link to the current resource.</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Link</td>
<td>Mandatory</td>
<td>Link to the jurisdiction publishing the event.</td>
</tr>
<tr>
<td>id</td>
<td>String</td>
<td>Mandatory</td>
<td>A globally unique ID for the event, following the format jurisdiction-id/event-id. For example, 511.org/8c3f2. The first segment of the event ID is the jurisdiction ID. The second segment is a</td>
</tr>
</tbody>
</table>
### Event Data Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>String ID</td>
<td>Free Text</td>
<td>A unique identifier for the event within a jurisdiction. It can contain any</td>
</tr>
<tr>
<td></td>
<td></td>
<td>character except for double quotes and must be unique across jurisdictions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The two parts are separated by a <code>/</code>.</td>
</tr>
<tr>
<td>Status</td>
<td>Enum</td>
<td>The status of the event. It determines whether the event is currently</td>
</tr>
<tr>
<td></td>
<td></td>
<td>effective. Value list:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>ACTIVE</strong>: The event should be considered as effective.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>ARCHIVED</strong>: The event should not be considered as effective.</td>
</tr>
<tr>
<td>Headline</td>
<td>Free Text</td>
<td>The title of the event. It should be no longer than 500 characters.</td>
</tr>
<tr>
<td>event_type</td>
<td>Enum</td>
<td>The basic type of event. Value list:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>CONSTRUCTION</strong>: Planned road work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>SPECIAL_EVENT</strong>: Special events (fair, sport event, etc.).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>INCIDENT</strong>: Accidents and other unexpected events.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>WEATHER_CONDITION</strong>: Weather conditions affecting the road.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>ROAD_CONDITION</strong>: Road status that might affect travelers.</td>
</tr>
<tr>
<td>Severity</td>
<td>Enum</td>
<td>The severity of the event. Value list:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>MINOR</strong>: The event has very limited impact on traffic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>MODERATE</strong>: The event will have a visible impact on traffic but should not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>create significant delay; if there is a delay, it should be small and local.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>MAJOR</strong>: The event will have a significant impact on traffic, probably on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a large scale.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>UNKNOWN</strong>: The impact is unknown, for example, in the case of an accident</td>
</tr>
<tr>
<td></td>
<td></td>
<td>that has been recorded without any precise description.</td>
</tr>
<tr>
<td>Geography</td>
<td>Geospatial</td>
<td>Mandatory</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>closure_geometry</td>
<td>Geospatial</td>
<td>Optional</td>
</tr>
<tr>
<td>Created</td>
<td>DateTime (UTC)</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Updated</td>
<td>DateTime (UTC)</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Schedule</td>
<td>schedule elements</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Timezone</td>
<td>timezone</td>
<td>Optional</td>
</tr>
<tr>
<td>Description</td>
<td>Free text</td>
<td>Optional</td>
</tr>
<tr>
<td>event_subtypes</td>
<td>Collection of event_subtype elements</td>
<td>Optional</td>
</tr>
</tbody>
</table>
| — event_subtype | Enum | Optional | - ACCIDENT  
- SERIOUS_ACCIDENT  
- NUMEROUS_ACCIDENTS  
- STALLED_VEHICLE  
- SPILL  
- OBSTRUCTION |
- MAJOR_HAZARD
- DEMONSTRATION

- ROAD_CONSTRUCTION
- WORK_IN_THE_MEDIAN
- NARROW_LANES

- TRAFFIC_ALTERNATING_DIRECTIONS
- BRIDGE_OPERATIONS
- BLASTING
- WORK_ON_UNDERGROUND
- EMERGENCY_MAINTENANCE

- SPORTING_EVENT
- MAJOR_EVENT
- CONCERT
- FESTIVAL
- FIREWORKS
- PARADE
- CROWD

- SEVERE_WEATHER
- HEAVY_SNOW
- SNOW
- ICE_GLAZE
- HEAVY_FROST
- ICE_STORM
- DAMAGING_HAIL
- THUNDERSTORM
- HEAVY_DOWNPOUR
- TORNADO
- HURRICANE
- STRONG_WINDS
- DENSE_FOG
- FREEZING_FOG
- ICE_FOG_MIST
- VISIBILITY_REDUCED
- VISIBILITY_BLOCKED
- BLOWING_SNOW
- BLOWING_DUST
- SANDSTORM
- INSECT_SWARMS

- IMPASSABLE
- ALMOST_IMPASSABLE
- PASSABLE_WITH_CARE
- SURFACE_WATER_HAZARD
- HYDROPLANING_DANGER
- SLIPPERY
- MUD
- LOOSE_GRAVEL
- OIL_ON_ROADWAY
- ICE
- BLACK_ICE
- WET_ICY_ROAD
- SLUSH
<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certainty</td>
<td>Enum</td>
<td>Degree of certainty of the event. Should only be used for unplanned events (e.g. incidents, weather conditions and pavement conditions events). Value list to be confirmed. Could be observed/likely/possible/unknown.</td>
</tr>
<tr>
<td></td>
<td>Optional</td>
<td>Value list</td>
</tr>
</tbody>
</table>
|                        |                             | - OBSERVED  
|                        |                             | - LIKELY  
|                        |                             | - POSSIBLE  
|                        |                             | - UNKNOWN                                                                                                                                   |
| grouped_events         | Collection of links         | This structure is used to group events together. In specific situations (for example complex construction projects), several events might be related together. This field should be used to point a related event. |
| — related              | Link                        | Link pointing to another event resource related to the current event.                                                                      |
| Detour                 | Free Text                   | Description of a detour route to avoid this event.                                                                                           |
| Roads                  | Collection of road elements | List of roads affected by the current event. One event can impact several roads.                                                            |
| Areas                  | Collections of area elements | Areas affected by the event.                                                                                                                  |
| attachments            | Collection of attachment links | Collection of attachments providing additional information about the event (PDFs, images, etc.)                                           |
| — related              | Link                        | Link to an attachment. While only the URL is mandatory, more information may be provided via type, length, title, and hreflang, with semantics as in Atom. |

**Road structure**

The road data format is used to provide information about the road(s) affected by an event. The structure of road_affected is:
<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Free Text</td>
<td>Mandatory</td>
<td>Name of the road affected by the event. Ideally, road names should be formatted in accordance with national or regional standards, and the same road should be named consistently in different events.</td>
</tr>
<tr>
<td>self / url</td>
<td>Link</td>
<td>Optional</td>
<td>Link to the Road resource for this road.</td>
</tr>
<tr>
<td>from</td>
<td>Free text</td>
<td>Optional</td>
<td>Approximate start point of the event on the road. It can be an intersection with another street or it can be a mileage indication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This value should not be used to determine the exact start point since it can be an approximation. The geometry field should be considered as the reference for exact location.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If no to field is provided, this field means &quot;nearby&quot;.</td>
</tr>
<tr>
<td>To</td>
<td>Free text</td>
<td>Optional</td>
<td>Approximate end point of the event on the road. It can be an intersection with another street or it can be a distance indication.</td>
</tr>
<tr>
<td>State</td>
<td>Enum</td>
<td>Optional</td>
<td>Whether the road segment is closed or not.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Value list:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- CLOSED (road closed in the given direction)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- SOME_LANES_CLOSED (but the road remains open)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- SINGLE_LANE_ALTERNATING (a single lane alternates between both directions of traffic)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- ALL_LANES_OPEN</td>
</tr>
<tr>
<td>direction</td>
<td>Enum</td>
<td>Conditional</td>
<td>Mandatory if state is provided.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Direction of the road that is affected by the event.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If a lane_status is provided, the direction becomes mandatory. In the same situation, if both directions are affected, two occurrences of the road element are needed, one for each direction and with a dedicated lane_status for each direction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Value list:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- N</td>
</tr>
</tbody>
</table>
### 511 Data Exchange Specification – Traffic Event API

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lanes_open</td>
<td>Integer</td>
<td>Optional</td>
<td>Number of lanes in the given direction remaining open during this event.</td>
</tr>
<tr>
<td>lanes_closed</td>
<td>Integer</td>
<td>Optional</td>
<td>Number of lanes in the given direction closed during this event.</td>
</tr>
<tr>
<td>impacted_systems</td>
<td>Collection of</td>
<td>Optional</td>
<td>Allows provision of information about other systems that can be affected.</td>
</tr>
<tr>
<td>impacted_system</td>
<td>impacted_system</td>
<td>Optional</td>
<td>Value list of systems: ROAD, SIDEWALK, BIKELANE, PARKING</td>
</tr>
<tr>
<td>restrictions</td>
<td>Collection of</td>
<td>Optional</td>
<td>Some events may come with some restrictions affecting vehicles using the road (speed, weight).</td>
</tr>
<tr>
<td></td>
<td>restriction_elements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Restriction structure**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>restriction_type</td>
<td>Enum</td>
<td>Mandatory</td>
<td>Type of restriction that affects vehicles. Value list:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SPEED: Limiation of the speed of vehicles. Unit is in kilometers/hour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WIDTH: Width limitation, mainly for trucks. Unit is meters.</td>
</tr>
</tbody>
</table>
### Value

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Mandatory/Optional</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Float</td>
<td>Mandatory</td>
<td>Value of the limitation. For example, a speed limitation of 60km/h will have a value of 60 with a restriction_type set to SPEED</td>
</tr>
</tbody>
</table>

**Schedule structure**

The schedule defines timelines of an event.

- **recurring_schedules**
  - **start_date** Date **Mandatory**
    - Start date of this schedule.
  - **end_date** Date **Optional**
    - End date of the event. If a start date but no end date is provided, the schedule continues indefinitely.
  - **daily_start_time** Time **Optional**
    - Daily start time of the event, as HH:mm, e.g. 13:00.
    - Applies to each day in this recurring_schedule.
  - **daily_end_time** Time **Conditional**
    - Mandatory if daily_start_time is provided, not allowed otherwise

**Notes**

- One (and only one) of recurring_schedules or intervals is required.
- The recurring_schedule structure expresses repeating schedules, like "Every day starting December 4th", or "Mondays 9 to 11 from September 1 to October 30." An event can include multiple recurring_schedule elements inside this recurring_schedules tag; exception elements can override them.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>— days</strong></td>
<td>collection of day elements</td>
<td>Optional</td>
</tr>
<tr>
<td>Contains a <strong>day</strong> tag for every day of the week during which this <strong>recurring_schedule</strong> is active. Days are indicated with an integer, with (following the ISO standard) Monday being 1 and Sunday 7. So, for an event active on Monday and Wednesday, <code>&lt;days&gt;&lt;day&gt;1&lt;/day&gt;&lt;day&gt;3&lt;/day&gt;&lt;/days&gt;</code>. If omitted, the schedule is active every day between its start and end dates.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>exceptions</strong></td>
<td>Collection of exception elements</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>if present, there must be a</strong> <strong>recurring_schedules</strong> <strong>element (and no intervals)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceptions override recurring schedules.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>— exception</strong></td>
<td>Custom time format</td>
<td>Mandatory</td>
</tr>
<tr>
<td>An exception provides the definitive schedule for a specific date. It overrides any <strong>recurring_schedule</strong> information for that date.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An exception of the form <strong>YYYY-MM-DD</strong> indicates that this event is <strong>not</strong> in effect for the given date.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An exception of the form <strong>YYYY-MM-DD HH:mm-HH:mm</strong> indicates that, on that date, the event is in effect only between the provided start and end time. If there are multiple disjoint periods on that day, more than one start-end period can be included: <strong>YYYY-MM-DD HH:mm-HH:mm HH:mm-HH:mm</strong>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>intervals</strong></td>
<td>Collection of interval elements</td>
<td>Conditional</td>
</tr>
<tr>
<td><strong>One (and only one) of</strong> <strong>recurring_schedules</strong> <strong>or intervals is required</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Represent an event's schedule as a list of explicit periods. An event must use either `recurring_schedules` or `intervals`, not both.

If this contains more than one `interval`, their time periods may not overlap. This also implies that no more than one can omit an end time.

---

**interval**

Custom time format, largely a subset of ISO8601 intervals

**Mandatory**

Defines a specific period of time during which the schedule is in effect; two datetimes (without timezone offset) joined with a `/`. For example, a period from 9 p.m. September 1 to 8 a.m. September 2 would be `2014-09-01T21:00/2014-09-02T08:00`.

The second datetime, after the slash, may be omitted. So, to indicate a period from 9 p.m. September 1 until further notice, use: `2014-09-01T21:00/`

---

**Sample request endpoint for events**

<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/Traffic/Events">http://api.511.org/Traffic/Events</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>
</table>
| format    | Optional           | The response format (json/xml) desired. If none specified, then default response would be JSON.  
  e.g.  
  ?format=json  (returns json response for v1, if v1 is the latest version or specified via version parameter)  
  ?format=xml |

January 1, 2019
<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Mandatory/Optional</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td>Optional</td>
<td>The version of Open511 desired. e.g. ?version=v1 (returns response for v1 in conjunction with format requested).</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>status</td>
<td>Optional</td>
<td>By default the API should only send active events. Supported values: ACTIVE Default value, returns only active events. ARCHIVED Returns only archived events ALL Returns both active and archived events.</td>
</tr>
<tr>
<td>in_effect_on</td>
<td>Optional</td>
<td>Show only events that are, according to their schedules, in effect at a specific time, or during a specific time period. Can be either a single time, or a start and end time joined by a comma. The times must be complete ISO 8601 datetimes, with or without a timezone. So to find, for example, all events in effect at some point on June 20th, you would ask for events between 00:00 and 23:59: in_effect_on=2013-06-20T00:00,2013-06-20T23:59 Or, to find events in effect within the next two hours, you’d get the current UTC timestamp — let's say it's 2013-06-20T17:40Z — and then request ?in_effect_on=2013-06-20T17:40Z,2013-06-20T19:40Z. You can also use the special value ?in_effect_on=now to show events currently taking place. If no timezone is provided, as in the first example, the server searches according to the local time as entered in the event. For example, if highways are closed for an hour at midnight on January 1st in both London and LA, ?in_effect_on=2014-01-01T00:00 would return both events (even though there’s no single moment in time when the roads are closed in both cities), whereas the timezone-aware ?in_effect_on=2014-01-01T00:00Z would return only the London event. If this argument is not provided, the API should not perform any filtering based on the event schedules.</td>
</tr>
<tr>
<td>severity</td>
<td>Optional</td>
<td>Filter by the value of the severity field. OR queries are possible via a comma-separated list: ?severity=MINOR,MODERATE.</td>
</tr>
<tr>
<td>Bbox</td>
<td>Optional</td>
<td>Filter events by geographical bounding box. Four comma-separated coordinates, xmin, ymin, xmax, ymax.</td>
</tr>
<tr>
<td>geography</td>
<td>Optional</td>
<td>Filtering near a point or linestring. The geography value should be provided as a WKT string in WGS84 latitude/longitude. Example: ...geography=POINT (-73.64 45.52). The geography must be used in conjunction with the tolerance filter.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| tolerance  | Conditional | Provide a tolerance of radius in meters around if a POINT or LINESTRING is used as filtering parameter. For example ...
|            |        | geography=POINT+(-73.64+45.52)&tolerance=50 would retrieve all the events within a circle of 50m radius around the selected point. |
| jurisdiction | Optional | The ID or URL of a jurisdiction, in order to show only events from a given jurisdiction. Use a comma-separated list to make OR queries.
|            |        | Example: jurisdiction=511.org.                                                                                                              |
| event_type | Optional | Filter events using the event_type value list. Use a comma-separated list to make OR queries.                                              |
| event_subtype | Optional | Filter events using the event_subtype value list. Use a comma-separated list to make OR queries.                                            |
| created    | Optional | Filter events based on the creation date and time. This parameter can (and generally will) be preceded with one of the following operators: < <= > >=. These allow searches for events created before or after a supplied time, e.g. created=>2013-05-10T12:00Z. |
| updated    | Optional | Filter events based on the last update timestamp. Accepts the same < <= > >= operators as created. Note: by default, the servers should only return ACTIVE events. When using the updated filter, in order to get events going from ACTIVE to ARCHIVED, the client must ask for all events: ...
|            |        | ?status=ALL                                                                                                                                |
| road_name  | Optional | Shows only events containing a road element with the provided name. Case-sensitive exact match. Use a comma-separated list to make OR queries. |
| Road       | Optional | Shows only events containing a road element linking to a road element with the provided id. Use a comma-separated list to make OR queries.  |
| Area       | Optional | Shows only events containing an area element with the provided id. Use a comma-separated list to make OR queries.                          |
| **Limit** | **Optional** | **The maximum number of events to return in a single paginated response.**  

The default value for this (i.e. how many items to include on a page if no limit parameter is provided) is up to individual implementors. Likewise, implementors may want to enforce a maximum value for this parameter in order to conserve server resources, so that a ?limit=10000 query would still return only e.g. 500 events per page. However, if such a maximum is implemented, it must not be lower than 500. |
|---|---|---|

The traffic event structure response for XML is shown in Appendix A Section A.I.1 and for JSON is shown in Appendix B Section B.I.1.

**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 event resource cannot be located).

3 Appendix A: API Response Messages- XML

3.1 Traffic XML

A.I.1 Example Traffic Event Structure Response (XML)

```xml
<open511
   xmlns:gml="http://www.opengis.net/gml"
   xml:lang="en"
   xml:base="http://api.511.org"
   version="v1"
>
   <events>
       <event>
           <status>ACTIVE</status>
           <link rel="self" href="/traffic/events/511.org/149"/>
           <link rel="jurisdiction" href="http://api.511.org/jurisdictions/511.org/"/>
           <id>511.org/149</id>
           <headline>CHP : Roadwork on CA-160 NorthBound between Main St (Antioch) and Antioch Bridge - Toll Plaza (Oakley) Acceleration lane closed Expect delays</headline>
           <event_type>INCIDENT</event_type>
           <severity>UNKNOWN</severity>
           <created>2014-05-01T19:28:31Z</created>
           <geography>

```
<gml:Point srsName="EPSG:4326">
  <gml:coordinates>-121.75382399999999,38.004908</gml:coordinates>
</gml:Point>
</geography>

<roads>
  <road>
    <name>CA-160</name>
    <from>Main St</from>
    <to>Antioch Bridge - Toll Plaza</to>
    <direction>NorthBound</direction>
    <state>Open</state>
  </road>
</roads>

<schedules>
  <schedule>
    <start_date>2014-05-01</start_date>
  </schedule>
</schedules>

<event>
  <status>ACTIVE</status>
  <link rel="self" href="/traffic/events/511.org/209"/>
  <link rel="jurisdiction" href="http://api.511.org/jurisdictions/511.org/"/>
  <id>511.org/209</id>
  <headline>CHP : Obstruction on US-101 N NorthBound before Coyote Creek Golf Dr (San Jose) left lane blocked Expect delays</headline>
  <event_type>INCIDENT</event_type>
  <severity>UNKNOWN</severity>
  <created>2014-05-02T01:13:55Z</created>
  <updated>2014-05-02T02:43:16Z</updated>
  <geography>
    <gml:Point srsName="EPSG:4326">
      <gml:coordinates>-121.69346399999999,37.19068</gml:coordinates>
    </gml:Point>
  </geography>
  <roads>
    <road>
      <name>US-101 N</name>
      <from>Coyote Creek Golf Dr</from>
      <to/>
      <direction>NorthBound</direction>
      <state>Open</state>
    </road>
  </roads>
  <schedules>
    <schedule>
      <start_date>2014-05-01</start_date>
    </schedule>
  </schedules>
  <closure_geometry xmlns:gml="http://www.opengis.net/gml" xmlns="http://511.org/open511-extensions">
    <gml:MultiLineString srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:LineStringMember>
        <gml:LineString>
          <gml:posList>-121.905403778982,37.4664031808211,-121.905516999724,37.4665420000284,-121.905530999967,37.4665599997276,-121.9055500000234,37.4665840000328,-121.9056659999987,37.4667269999391,-121.9060120000191,37.4671670000238,-121.9064049999653,37.4676470000268,-121.9067150000173,37.4680369998512,-</gml:posList>
        </gml:LineString>
      </gml:LineStringMember>
    </gml:MultiLineString>
  </closure_geometry>
</event>
\begin{verbatim}
121.907135000298,37.4685380001628,-121.907399999865,37.4688380001212,-
121.907609999493,37.4690580000859,-121.907808999967,37.4693440001416,121.938268000236,37.512444999755,-
121.938432000268,37.512730000037,-121.938663000246,37.513139999746,-
121.938907999957,37.5135599999043,-121.9391750000432,37.514022000349,-
121.939356000124,37.5143290001285,-121.939525000237,37.5146310001649,-
121.939581665124,37.514744758603
</gml:posList>
</gml:LineString>
</gml:LineStringMember>
</gml:LineString>
</gml:LineStringMember>
</gml:LineString>
</gml:posList>
</gml:LineString>
</gml:LineStringMember>
</gml:LineString>
</gml:LineStringMember>
</gml:posList>
</gml:LineString>
</gml:LineStringMember>
</gml:MultiLineString>
</closure_geometry>
</event>
</events>

\end{verbatim}
4  Appendix B: API Response Messages- JSON

4.1 Traffic JSON

B.1.1 Example Traffic Event Structure Response (JSON)

```json
{
  "events": [{
    "url": "/traffic/events/511.org/149",
    "jurisdiction_url": "http://api.511.org/jurisdictions/511.org/",
    "id": "511.org/149",
    "status": "ACTIVE",
    "headline": "CHP : Roadwork on CA-160 NorthBound between Main St (Antioch) and Antioch Bridge - Toll Plaza (Oakley) Acceleration lane closed Expect delays",
    "event_type": "INCIDENT",
    "severity": "UNKNOWN",
    "created": "2014-05-01T19:28:31Z",
    "geography": {
      "type": "Point",
      "coordinates": [
        -121.753824, 38.004908
      ]
    },
    "roads": [{
      "name": "CA-160",
      "from": "Main St",
      "to": "Antioch Bridge - Toll Plaza",
      "direction": "NorthBound",
      "state": "Open"
    }],
    "schedules": [{
      "start_date": "2014-05-01"
    }],
    "+closure_geography": {
      "type": "MultiLineString",
      "coordinates": [
        [-121.965344339091, 38.0227069562185],
        [-121.965265000299, 38.0226909996807],
        [-121.964901000251, 38.0226219996731],
        [-121.963347999975, 38.0223280002051],
        [-121.963122999844, 38.022860001848]
      ]
    }
  }]
}
```
{
  "url": "/traffic/events/511.org/209",
  "jurisdiction_url": "http://api.511.org/jurisdictions/511.org/",
  "id": "511.org/209",
  "status": "ACTIVE",
  "headline": "CHP : Obstruction on US-101 N NorthBound before Coyote Creek Golf Dr (San Jose) left lane blocked Expect delays",
  "event_type": "INCIDENT",
  "severity": "UNKNOWN",
  "created": "2014-05-02T01:13:55Z",
  "updated": "2014-05-02T02:43:16Z",
  "geography": {
    "type": "Point",
    "coordinates": [
      -121.693464,
      37.19068
    ]
  },
  "roads": [
    {
      "name": "US-101 N",
      "from": "Coyote Creek Golf Dr",
      "to": "",
      "direction": "NorthBound",
      "state": "Open"
    }
  ],
  "schedules": [
    {
      "start_date": "2014-05-01"
    }
  ]
}
"pagination": {
  "next_url": "/traffic/events/?api_key={api_key}&limit=2&offset=2",
  "offset": 0
},
"meta": {
  "url": "traffic/events/?api_key={api_key}&limit=2&offset=0",
  "up_url": "/",
  "version": "v1"
}