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BusTime Developer API Guide

Version 1.3
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1 Overview

1.1 What is the BusTime Developer API?

The BusTime Developer API allows users to request and retrieve data directly from BusTime in real-time. Registered third-party developers can make HTTP requests for data and receive XML responses from the BusTime web server.

1.2 What data is available through the API?

Data available through the API includes:

- Vehicle locations
- Route data (route lists, stop lists geo-positional route definitions, etc.)
- Prediction Data
- Service Bulletins

1.3 Will my application break if changes are made to the API?

No. The API is fully backward compatible, allowing time for developers to upgrade their applications to make use of new API features.

1.4 How does the Developer API work?

In order to use the API, the user must sign in to their BusTime account and then request an API key. Only one key will be available per account. Once the request has been approved, the user will be sent an e-mail will be sent to the user containing the API key.

The key allows the user to make calls to the API as it is included in every data request.

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1.5 Is there a limit to the number of requests I can make to the Developer API?

Yes. By default, one API key can make a maximum of 10,000 requests. If you believe that you will require more than 10,000 daily requests, you must request that the cap on your key be raised to handle the additional traffic.

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2 Web Service

The BusTime Developer API is a web service that uses HTTP/1.1 as its application protocol. Each type of call/request to the API is an HTTP GET call to a unique URL. Parameters are encoded in the HTTP GET request by following the URL with a "?" and "argument=value" pairs separated by "&".

The response is a well-formed XML document with a Content-Type of "text/xml".

For example, to request the current system time through the developer API, a program or script will make a HTTP/1.1 GET request to the following URL with parameters:

http://[host:port]/bustime/api/v1/gettime?key=89dj2he89d8j3j3ksjhdue93j

The **[host:port]** is the host and port on which the Developer API is servicing HTTP requests. The port is not required if requests are being serviced on port 80.

The version of the API that is being accessed is built into the URL. In the above example, "**v1**" represents version 1.0 of the API.

The "**key**" parameter represents the API key assigned to the developer making the request. All requests to the API must be accompanied by a valid API key.

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3 Reference

This section describes all requests that can be made to the BusTime Developer API. The description of each request includes a complete set of possible arguments along with the response XML and schema.

Definitions

- **Delayed Vehicle –** The state entered by a vehicle when it has been determined to be stationary for more than a pre-defined time period.
- **Direction –** Common direction of travel of a route.
- **Off-route Vehicle** – State entered by a transit vehicle when it has strayed from its scheduled pattern.
- **Pattern** – A unique sequence of geo-positional points (waypoints and stops) that combine to form the path that a transit vehicle will repetitively travel. A route often has more than one possible pattern.
- **Route** – One or more set of patterns that together form a single service.
- **Service Bulletin** – Text-based announcements affecting a set of one or more services (route, stops, etc.).
- **Stop –** Location where a transit vehicle can pick-up or drop-off passengers. Predictions are only generated at stops.
- **Waypoint –** A geo-positional point in a pattern used to define the travel path of a transit vehicle.

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3.1 Time

Base URL: http://[host:port]/bustime/api/v1/gettime

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.

Response

A well-formed XML document containing the current system time will be returned as a response to **gettime**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Contains a message if the processing of the request resulted in an error.
tm	Child element of the root element containing the current system date and (local) time. Date and time is represented in the following format: YYYYMMDD HH:MM:SS. Month is represented as two digits where January is equal to "01" and December is equal to "12". Time is represented using a 24-hour clock.

Remarks

Use the **gettime** request to retrieve the current system date and time. Since BusTime is a time-dependent system, it is important to synchronize your application with BusTime's system date and time.

The time specified is the local time.

Schema

```
<?xml version="1.0" encoding="utf-8" ?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name="bustime-response" type=" bustime-response" />
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="tm" type="xs:string" minOccurs="0" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
</xs:schema>
```

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Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/gettime?key=89dj2he89d8j3j3ksjhdue93j

Response

```
<?xml version="1.0"?>
<bustime-response>
        <tm>20090611 14:42:32</tm>
</bustime-response>
```

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3.2 Vehicles

Base URL: http://[host:port]/bustime/api/v1/getvehicles

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.
vid	comma-delimited list of vehicle IDs (not available with **rt** parameter)	Set of one or more vehicle IDs whose location should be returned. For example: 509,392,201,4367 will return information for four vehicles (if available). A maximum of 10 identifiers can be specified.
rt	comma-delimited list of route designators (not available with **vid** parameter)	Set of one or more route designators for which matching vehicles should be returned. For example: X3,4,20 will return information for all vehicles currently running those three routes (if available). A maximum of 10 identifiers can be specified.

Response
A well-formed XML document will be returned as a response to **getvehicles**. The XML document will contain an element for every vehicle matching the specified arguments.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
vehicle	Child element of the root element. Encapsulates all information available for a single vehicle in the response.
vid	Child element of the **vehicle** element. Alphanumeric string representing the vehicle ID (ie. bus number)
tmstmp	Child element of the **vehicle** element. Date and local time of the last positional update of the vehicle. Date and time is represented in the following format: YYYYMMDD HH:MM. Month is represented as two digits where January is equal to “01” and December is equal to “12”. Time is represented using a 24-hour clock.
lat	Child element of the **vehicle** element. Latitude position of the vehicle in decimal degrees (WGS 84).
lon	Child element of the **vehicle** element. Longitude position of the vehicle in decimal degrees (WGS 84).

hdg	Child element of the **vehicle** element. Heading of vehicle as a 360º value, where 0º is North, 90º is East, 180º is South and 270º is West.
pid	Child element of the **vehicle** element. Pattern ID of trip currently being executed.
pdist	Child element of the **vehicle** element. Linear distance in feet that the vehicle has traveled into the pattern currently being executed.
rt	Child element of the **vehicle** element. Route that is currently being executed by the vehicle (ex. "20").
des	Child element of the **vehicle** element. Destination of the trip being executed by the vehicle (ex. "Austin").
dly	Child element of the **vehicle** element. The value is "true" if the vehicle is delayed. The **dly** element is only present if the vehicle is delayed.

Remarks

Use the **getvehicles** request to retrieve vehicle information (i.e., locations) of all or a subset of vehicles currently being tracked by BusTime.

Use the **vid** parameter to retrieve information for one or more vehicles currently being tracked.

Use the **rt** parameter to retrieve information for vehicles currently running one or more of the specified routes.

Note: The **vid** and **rt** parameters cannot be combined in one request. If both parameters are specified on a request to **getvehicles,** only the first parameter specified on the request will be processed.

Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
<xs:element name="bustime-response" type="bustime-response"/>
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="vehicle" type="vehicle" minOccurs="0"
			maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="vid" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="rt" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="vehicle">
		<xs:sequence>
			<xs:element name="vid" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="tmpstmp" type="xs:string" minOccurs="1" maxOccurs="1"/>
```

```
                    <xs:element name="lat" type="xs:double" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="lon" type="xs:double" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="hdg" type="xs:int" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="pid" type="xs:int" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="pdist" type="xs:int" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="rt" type="xs:string" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="des" type="xs:string" minOccurs="1" maxOccurs="1"/>
                    <xs:element name="dly" type="xs:boolean" minOccurs="1" maxOccurs="1"/>
            </xs:sequence>
        </xs:complexType>
</xs:schema>
```

Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getvehicles?key=89dj2he89d8j3j3ksjhdue93j&vid=509,392

Response

```
<?xml version="1.0"?>
<bustime-response>
        <vehicle>
                <vid>509</vid>
                <tmstmp>20090611 10:28</tmstmp>
                <lat>41.92124938964844</lat>
                <lon>-87.64849853515625</lon>
                <hdg>358</hdg>
                <pid>3630</pid>
                <pdist>5678</pdist>
                <rt>8</rt>
                <des>Waveland/Broadway</des>
        </vehicle>
        <vehicle>
                <vid>392</vid>
                <tmstmp>20090611 10:28</tmstmp>
                <lat>41.91095733642578</lat>
                <lon-87.64120713719782</lon>
                <hdg>88</hdg>
                <pid>1519</pid>
                <pdist>11203</pdist>
                <rt>72</rt>
                <des>Clark</des>
        </vehicle>
</bustime-response>
```

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3.3 Routes

Base URL: http://[host:port]/bustime/api/v1/getroutes

Parameters:

Name	Value	Description
Key	string (required)	25-digit BusTime Developer API access key.

Response
A well-formed XML document will be returned as a response to **getroutes**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
route	Child element of the root element. Encapsulates a route serviced by the system.
rt	Child element of the **route** element. Alphanumeric designator of a route (ex. “20” or “X20”).
rtnm	Child element of the **route** element. Common name of the route (ex. “Madison” for the 20 route).

Remarks
Use the **getroutes** request to retrieve the set of routes serviced by the system.

Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name="bustime-response" type="bustime-response"/>
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="route" type="route" minOccurs="0"
			maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="route">
		<xs:sequence>
			<xs:element name="rt" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="rtnm" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
</xs:schema>
```

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Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getroutes?key=89dj2he89d8j3j3ksjhdue93j

Response

```
<?xml version="1.0"?>
<bustime-response>
        <route>
                <rt>1</rt>
                <rtnm>Indiana/Hyde Park</rtnm>
        </route>
        <route>
                <rt>2</rt>
                <rtnm>Hyde Park Express</rtnm>
        </route>
        <route>
                <rt>3</rt>
                <rtnm>King Drive</rtnm>
        </route>
        <route>
                <rt>X3</rt>
                <rtnm>King Drive Express</rtnm>
        </route>
.
.
.
</bustime-response>
```

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3.4 Route Directions

Base URL: http://[host:port]/bustime/api/v1/getdirections

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.
rt	Single route designator (required)	Alphanumeric designator of a route (ex. “20” or “X20”) for which a list of available directions is to be returned.

Response
A well-formed XML document will be returned as a response to **getdirections**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
dir	Child element of the root element. Direction that is valid for the specified route designator. For example, “East Bound”.

Remarks
Use the **getdirections** request to retrieve the set of directions serviced by the specified route.

Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name="bustime-response" type="bustime-response"/>
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="dir" type="xs:string" minOccurs="0"
			maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="rt" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
</xs:schema>
```

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Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getdirections?key=89dj2he89d8j3j3ksjhdue93j&rt=20

Response

```
<?xml version="1.0"?>
<bustime-response>
        <dir>East Bound</dir>
        <dir>West Bound</dir>
</bustime-response>
```

3.5 Stops

Base URL: http://[host:port]/bustime/api/v1/getstops

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.
rt	Single route designator (required)	Alphanumeric designator of the route (ex. "20" or "X20") for which a list of available stops is to be returned.
dir	Single route direction (required)	Direction of the route (ex. "East Bound") for which a list of available stops is to be returned.

Response
A well-formed XML document will be returned as a response to **getstops**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
stop	Child element of the root element. Encapsulates all descriptive information about a particular stop.
stpid	Child element of the **stop** element. Unique identifier representing this stop.
stpnm	Child element of the **stop** element. Display name of this stop (ex. "Madison and Clark")
lat	Child element of the **stop** element. Latitude position of the stop in decimal degrees (WGS 84).
lon	Child element of the **stop** element. Longitude position of the stop in decimal degrees (WGS 84).

Remarks
Use the **getstops** request to retrieve the set of stops for the specified route and direction.

Stop lists are only available for a valid route/direction pair. In other words, a list of all stops that service a particular route (regardless of direction) cannot be requested.

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Schema:

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name="bustime-response" type="bustime-response"/>
	<xs:complexType name=" bustime-response">
		<xs:sequence>
			<xs:element name="error" type="xs:string" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="stop" type="stop" minOccurs="0" maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="rt" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="dir" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="stop">
		<xs:sequence>
			<xs:element name="stpid" type="xs:int" minOccurs="1" maxOccurs="1"/>
			<xs:element name="stpnm" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="lat" type="xs:double" minOccurs="1" maxOccurs="1"/>
			<xs:element name="lon" type="xs:double" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
</xs:schema>
```

Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getstops?key=89dj2he89d8j3j3ksjhdue93j&rt=20&dir=East%20Bound

Response

```
<?xml version=”1.0”?>
<bustime-response>
	<stop>
		<stpid>4727</stpid>
		<stpnm>1633 W Madison</stpnm>
		<lat>41.881265</lat>
		<lon>-87.66849</lon>
	</stop>
	<stop>
		<stpid>9604</stpid>
		<stpnm>Austin & Pleasant/Fulton</stpnm>
		<lat>41.885206667</lat>
		<lon>-87.7748733333333</lon>
	</stop>
	<stop>
		<stpid>9605</stpid>
		<stpnm>Austin & Randolph/West End</stpnm>
		<lon>41.8838633333333</lon>
		<lat>-87.7748566666667</lat>
	</stop>
	<stop>
		<stpid>9603</stpid>
		<stpnm>Austin & South Blvd/Corcoran</stpnm>
		<lat>41.886908333</lat>
		<lon>-87.77493667</lon>
	</stop>
</bustime-response>
```

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3.6 Patterns

Base URL: http://[host:port]/bustime/api/v1/getpatterns

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.
pid	comma-delimited list of pattern IDs (not available with **rt** parameter)	Set of one or more pattern IDs whose points should be returned. For example: 56,436,1221 will return points from three (3) patterns. A maximum of 10 identifiers can be specified.
rt	Single route designator (not available with **pid** parameter)	Route designator for which all active patterns should be returned.

Response
A well-formed XML document will be returned as a response to **getpatterns**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
ptr	Child element of the root element. Encapsulates a set of points which define a pattern.
pid	Child element of the **ptr** element. ID of pattern.
ln	Child element of the **ptr** element. Length of the pattern in feet.
rtdir	Child element of the **ptr** element. Direction that is valid for the specified route designator. For example, “East Bound”.
pt	Child element of the **ptr** element. Child element of the root element. Encapsulates one a set of geo-positional points (including stops) that when connected define a pattern.
seq	Child element of the **pt** element. Position of this point in the overall sequence of points.
typ	Child element of the **pt** element. ‘S’ if the point represents a Stop, ‘W’ if the point represents a waypoint along the route.
stpid	Child element of the **pt** element. If the point represents a stop, the unique identifier of the stop.
stpnm	Child element of the **pt** element. If the point represents a stop, the display name of the stop.

pdist	Child element of the **pt** element. If the point represents a stop, the linear distance of this point (feet) into the requested pattern.
lat	Child element of the **pt** element. Latitude position of the point in decimal degrees (WGS 84).
lon	Child element of the **pt** element. Longitude position of the point in decimal degrees (WGS 84).

Remarks

Use the **getpatterns** request to retrieve the set of geo-positional points and stops that when connected can be used to construct the geo-positional layout of a pattern (i.e., route variation).

Use **pid** to specify one or more identifiers of patterns whose points are to be returned. A maximum of 10 patterns can be specified.

Use **rt** to specify a route identifier where all active patterns are returned. The set of active patterns returned includes: one or more patterns marked as "default" patterns for the specified route and all patterns that are currently being executed by at least one vehicle on the specified route.

Note: The **pid** and **rt** parameters cannot be combined in one request. If both parameters are specified on a request to **getpatterns,** only the first parameter specified on the request will be processed.

Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name="bustime-response" type="bustime-response"/>
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="ptr" type="ptr" minOccurs="0" maxOccurs="10"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="pid" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="rt" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="ptr">
		<xs:element name="pid" type="xs:int" minOccurs="1" maxOccurs="1"/>
		<xs:element name="ln" type="xs:int" minOccurs="1" maxOccurs="1"/>
		<xs:element name="rtdir" type="xs:string" minOccurs="1" maxOccurs="1"/>
		<xs:element name="pt" type="pt" minOccurs="1" maxOccurs="unbounded"/>
	</xs:complexType>
	<xs:complexType name="pt">
		<xs:sequence>
			<xs:element name="seq" type="xs:int" minOccurs="1" maxOccurs="1"/>
			<xs:element name="typ" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="stpid" type="xs:int" minOccurs="0" maxOccurs="1"/>
			<xs:element name="stpnm" type="xs:string" minOccurs="0" maxOccurs="1"/>
```

```
                        <xs:element name="pdist" type="xs:float" minOccurs="0" maxOccurs="1"/>
                        <xs:element name="lat" type="xs:double" minOccurs="1" maxOccurs="1"/>
                        <xs:element name="lon" type="xs:double" minOccurs="1" maxOccurs="1"/>
                </xs:sequence>
        </xs:complexType>
</xs:schema>
```

Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getpatterns?key=89dj2he89d8j3j3ksjhdue93j&rt=20&pid=954

Response

```
<?xml version="1.0"?>
<bustime-response>
        <ptr>
                <pid>954</pid>
                <ln>35569</ln>
                <rtdir>East Bound</rtdir>
                <pt>
                        <seq>1</seq>
                        <typ>S</typ>
                        <stpid>409</stpid>
                        <stpnm>Madison & Pulaski</stpnm>
                        <lat>41.880641167057</lat>
                        <lon>-87.725835442543</lon>
                        <pdist>0.0</pdist>
                </pt>
                <pt>
                        <seq>2</seq>
                        <typ>W</typ>
                        <lat>41.880693089146</lat>
                        <lon>-87.725765705109</lon>
                </pt>
                <pt>
                        <seq>3</seq>
                        <typ>W</typ>
                        <lat>41.880693089146</lat>
                        <lon>-87.725674510002</lon>
                        <pdist>97.0</pdist>
                </pt>
                .
                .
                .
        </ptr>
</bustime-response>
```

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3.7 Predictions

Base URL: http://[host:port]/bustime/api/v1/getpredictions

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.
stpid	comma-delimited list of stop IDs (not available with **vid** parameter)	Set of one or more stop IDs whose predictions are to be returned. For example: 5029,1392,2019,4367 will return predictions for the four stops. A maximum of 10 identifiers can be specified.
rt	comma-delimited list of route designators (optional, available with **stpid** parameter)	Set of one or more route designators for which matching predictions are to be returned.
vid	comma-delimited list of vehicle IDs (not available with **vid** parameter)	Set of one or more vehicle IDs whose predictions should be returned. For example: 509,392,201,4367 will return predictions for four vehicles. A maximum of 10 identifiers can be specified.
top	number (optional)	Maximum number of predictions to be returned.

Response
A well-formed XML document will be returned as a response to **getpredictions**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
prd	Child element of the root element. Encapsulates a predicted arrival or departure time for the specified set of stops or vehicles.
tmstmp	Child element of the **prd** element. Date and time (local) the prediction was generated. Date and time is represented in the following format: YYYYMMDD HH:MM. Month is represented as two digits where January is equal to “01” and December is equal to “12”. Time is represented using a 24-hour clock.

typ	Child element of the **prd** element. Type of prediction. 'A' for an arrival prediction (prediction of when the vehicle will arrive at this stop). 'D' for a departure prediction (prediction of when the vehicle will depart this stop, if applicable). Predictions made for first stops of a route or layovers are examples of departure predictions.
stpid	Child element of the **prd** element. Unique identifier representing the stop for which this prediction was generated.
stpnm	Child element of the **prd** element. Display name of the stop for which this prediction was generated.
vid	Child element of the **prd** element. Unique ID of the vehicle for which this prediction was generated.
dstp	Child element of the **prd** element. Linear distance (feet) left to be traveled by the vehicle before it reaches the stop associated with this prediction.
rt	Child element of the **prd** element. Alphanumeric designator of the route (ex. "20" or "X20") for which this prediction was generated.
rtdir	Child element of the **prd** element. Direction of travel of the route associated with this prediction (ex. "East Bound").
des	Child element of the **prd** element. Final destination of the vehicle associated with this prediction.
prdtm	Child element of the **prd** element. Predicted date and time (local) of a vehicle's arrival or departure to the stop associated with this prediction. Date and time is represented in the following format: YYYYMMDD HH:MM. Month is represented as two digits where January is equal to "01" and December is equal to "12". Time is represented using a 24-hour clock.
dly	Child element of the **prd** element. "true" if the vehicle is delayed. The **dly** element is only present if the vehicle that generated this prediction is delayed.

Remarks

Use the **getpredictions** request to retrieve predictions for one or more stops or one or more vehicles. Predictions are always returned in ascending order according to **prdtm**.

Use the **vid** parameter to retrieve predictions for one or more vehicles currently being tracked. A maximum of 10 vehicles can be specified.

Use the **stpid** parameter to retrieve predictions for one or more stops. A maximum of 10 stops can be specified.

Note: The **vid** and **stpid** parameters cannot be combined in one request. If both parameters are specified on a request to **getpredictions,** only the first parameter specified on the request will be processed.

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All call to **getpredictions** without specifying the **vid** or **stpid** parameter is not allowed.

Use the **top** parameter to specify the maximum number of predictions to return. If **top** is not specified, then all predictions matching the specified parameters will be returned.

Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name="bustime-response" type="bustime-response"/>
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs="0"
			maxOccurs="unbounded"/>
			<xs:element name="prd" type="prediction" minOccurs="0"
			maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="stpid" type="xs:int" minOccurs="0" maxOccurs="1"/>
			<xs:element name="vid" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="prediction">
		<xs:sequence>
			<xs:element name="tmstmp" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="typ" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="stpid" type="xs:int" minOccurs="1" maxOccurs="1"/>
			<xs:element name="stpnm" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="vid" type="xs:int" minOccurs="1" maxOccurs="1"/>
			<xs:element name="dstp" type="xs:int" minOccurs="1" maxOccurs="1"/>
			<xs:element name="rt" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="rtdir" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="des" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="prdtm" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="dly " type="xs:boolean" minOccurs="0" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
</xs:schema>
```

Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getpredictions?key=89dj2he89d8j3j3ksjhdue93j&rt=20&stpid=456

Response

```
<?xml version=”1.0”?>
<bustime-response>
	<tm></tm>
	<prd>
		<tmstmp>20090611 14:34</tmstmp>
		<typ>A</typ>
		<stpid>456</stpid>
		<stpnm>Madison & Jefferson</stpnm>
		<vid>2013</vid>
		<dstp>891</dstp>
```

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```
                <rt>20</rt>
                <rtdir>West Bound</rtdir>
                <rtdst>Austin</rtdst>
                <prdtm>20090611 14:40</prdtm>
        </prd>
        <prd>
                <tmstmp>20090611 14:34</tmstmp>
                <typ>A</typ>
                <stpid>456</stpid>
                <stpnm>Madison & Jefferson</stpnm>
                <vid>6435</vid>
                <dstp>1587</dstp>
                <rt>20</rt>
                <rtdir>West Bound</rtdir>
                <rtdst>Austin</rtdst>
                <prdtm>20090611 14:48</prdtm>
        </prd>
</bustime-response>
```

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3.8 Service Bulletins

Base URL: http://[host:port]/bustime/api/v1/getservicebulletins

Parameters:

Name	Value	Description
key	string (required)	25-digit BusTime Developer API access key.
rt	comma-delimited list of route designators (required if **stpid** not specified)	Alphanumeric designator of the route(s) (ex. "20" or "X20") for which a list of service bulletins is to be returned. If combined with **rtdir**, only one route can be specified.
rtdir	Single route direction (optional)	Direction of travel of the route specified in the **rt** parameter. The **rt** parameter is required when using the **rtdir** parameter.
stpid	Comma-delimited list of stop IDs (required if **rt** not specified)	Set of one or more stop IDs for which service bulletins are to be returned. For example: 5029,1392,2019,4367 will return predictions for the four stops (if available). If combined with **rt** and **rtdir**, only one stop can be specified.

Response
A well-formed XML document will be returned as a response to **getservicebulletins**.

Response Fields:

Name	Description
bustime-response	Root element of the response document.
error	Child element of the root element. Message if the processing of the request resulted in an error.
sb	Child element of the root element. Encapsulates all data about a service bulletin.
nm	Child element of the **sb** element. Unique name/identifier of the service bulletin.
sbj	Child element of the **sb** element. Service bulletin subject. A short title for this service bulletin.
dtl	Child element of the **sb** element. Service bulletin detail. Full text of the service bulletin.
brf	Child element of the **sb** element. Service bulletin brief. A short text alternative to the service bulletin detail.
prty	Child element of the **sb** element. Service bulletin priority. The possible values are "High," "Medium," and "Low".

srvc	Child element of the **sb** element. Each **srvc** element represents one or a combination of route, direction and stop for which this service bulletin is valid. If the **srvc** element is not present, the service bulletin affects all routes and stops.
rt	Child element of **srvc**. Alphanumeric designator of the route (ex. “20” or “X20”) for which this service bulletin is in effect.
rtdir	Child element of **srvc**. Direction of travel of the route for which this service bulletin is in effect.
stpid	Child element of **srvc**. ID of the stop for which this service bulletin is in effect.
stpnm	Child element of **srvc**. Name of the stop for which this service bulletin is in effect.

Remarks

Use the **getservicebulletins** for a list of service bulletins that are in effect for a route(s) (**rt**), route & direction (**rt** & **rtdir**), route & direction & stop (**rt** & **rtdir** & **stpid**), or stop(s) (**stpid**). At a minimum, the **rt** or **stpid** parameter must be specified.

A service bulletin (**sb**) definition without a **srvc** element indicates a “system-wide” service bulletin. System-wide service bulletins are valid for all routes/stops in the system.

Schema

```
<?xml version="1.0"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
	<xs:element name=”bustime-response” type=”bustime-response”/>
	<xs:complexType name="bustime-response">
		<xs:sequence>
			<xs:element name="error" type="error" minOccurs=”0”
			maxOccurs=”unbounded”/>
			<xs:element name="sb" type="servicebulletin" minOccurs="1"
			maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="error">
		<xs:sequence>
			<xs:element name="rt" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="rtdir" type="xs:string" minOccurs="0" maxOccurs="1"/>
			<xs:element name="stpid" type="xs:int" minOccurs="0" maxOccurs="1"/>
			<xs:element name="msg" type="xs:string" minOccurs="1" maxOccurs="1"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="servicebulletin">
		<xs:sequence>
			<xs:element name="nm " type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="sbj" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="dtl" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="brf" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="prty" type="xs:string" minOccurs="1" maxOccurs="1"/>
			<xs:element name="srvc" type="affectedservice" minOccurs="0"
			maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="affectedservice">
		<xs:sequence>
			<xs:element name="rt" type="xs:string" minOccurs="0" maxOccurs="1"/>
```

```
                        <xs:element name="rtdir" type="xs:string" minOccurs="0" maxOccurs="1"/>
                        <xs:element name="stpid" type="xs:int" minOccurs="0" maxOccurs="1"/>
                        <xs:element name="stpnm" type="xs:string" minOccurs="1" maxOccurs="1"/>
                </xs:sequence>
        </xs:complexType>
</xs:schema>
```

Example

The XML document below is a response to the following request:

Request

http://localhost:8080/bustime/api/v1/getservicebulletins?key=89dj2he89d8j3j3ksjhdue93j&stpid=456

Response

```
<?xml version="1.0"?>
<bustime-response>
        <sb>
                <sbj>Stop Relocation</sbj>
                <dtl>The westbound stop located at Madison/Lavergne has been moved to the
northeast corner at Madison/Lavergne.</dtl>
                <brf> The westbound stop located at Madison/Lavergne has been moved to the
northeast corner at Madison/Lavergne.</brf>
                <prty>low</prty>
                <srvc>
                        <rt>20</rt>
                </srvc>
        </sb>
        <sb>
                <sbj>Stop Relocations/Eliminations</sbj>
                <dtl>Bus stops are being changed to provide faster travel time.</dtl>
                <brf>Bus stops are being changed to provide faster travel time.</brf>
                <prty>low</prty>
                <srvc>
                        <stpid>456</stpid>
                </srvc>
        </sb>
</bustime-response>
```