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**The Time Zone Data Distribution Service (TZDIST) Geolocate Extension  
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Abstract

This document defines an extension to the Time Zone Data Distribution Service ([RFC 7808](#)) to allow a mobile device to retrieve the time zones associated with a geographic location as specified by a 'geo' URI ([RFC 5870](#)).

Open Issues

- o Determine which, if any, GEOPRIV requirements we need to follow and how they impact Security/Privacy considerations.
- o Need a new field(s) in the response to indicate which time zone(s) contain the point location vs those which are nearby (intersect the radius of uncertainty).

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## [1.](#) Introduction

Updating time zone data with Time Zone Data Distribution (TZDIST) requires prior knowledge of the time zone identifier. Such prior knowledge may be inconvenient for mobile devices that may pass through multiple time zones as their geographic location changes. This specification defines a new TZDIST service action to allow a client on a mobile device to retrieve the time zone identifiers associated with its current location, as specified by a 'geo' URI [[RFC5870](#)].

This specification does not define the source of the time zone boundary data. It is assumed that a reliable and accurate source is available. One such source is the Time Zone Boundary Builder [[TZBB](#)].

## [2.](#) Conventions Used in This Document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].



This specification contains examples of HTTP requests and responses. In some cases, additional line breaks have been introduced into the request or response data to match maximum line-length limits of this document.

### 3. "geolocate" Action

Name: geolocate

Request-URI Template:

`{/service-prefix,data-prefix}/zones{?location}`

Description: This action allows a client to query the time zone data distribution service for the time zone identifier(s) corresponding to the given geographic location, specified as a 'geo' URI [[RFC5870](#)].

If the 'geo' URI specifies a location that lies on a time zone boundary or within multiple time zone boundaries (e.g. there is no consensus as to the official time zone in the given region), the server SHOULD return the time zone identifiers for all time zones whose boundary contains the location.

If the 'geo' URI specifies an uncertainty value ("u=" parameter), the server MUST return the time zone identifiers for all time zones whose boundary passes through the radius of uncertainty. In the absence of a client-supplied uncertainty value, the server MAY use an implicit uncertainty to coincide with any uncertainty in the time zone boundary data that it uses.

If the 'geo' URI specifies a coordinate reference system ("crs=" parameter) that is unsupported by the server, the server SHOULD return a JSON "problem details" object [[RFC7807](#)] in the response body including a "type" member with an "invalid-location" error URN as defined below.

Parameters:

location=<geo-URI> REQUIRED, and MUST occur only once.

Response: The response has the same format as the "list" and "find" actions (see [[RFC7808](#)] [Section 6.2](#)), with one result object for each geolocated time zone. If for any reason the server can not determine a time zone in which the point is located (e.g. uninhabited location), it MUST return a "list" response containing zero time zone objects.

Possible Error Codes



urn:ietf:params:tzdist:error:invalid-location The "location" URI query parameter has an incorrect or unsupported value or appears more than once.

### 3.1. Examples: geolocate action

The examples below presume that the timezone context path has been discovered (see [\[RFC7808\] Section 4.2.1](#)) to be "/tzdist".

In this example the client asks for the time zone corresponding to the Royal Observatory, Greenwich [\[ROG\]](#).

>> Request <<

```
GET /tzdist/zones?location=geo:51.47778,0.001388889 HTTP/1.1
Host: tz.example.com
```

>> Response <<

```
HTTP/1.1 200 OK
Date: Fri, 09 Nov 2018 13:43:28 GMT
Content-Type: application/json; charset="utf-8"
Content-Length: xxxx
```

```
{
  "synctoken": "2860088640-1510059107",
  "timezones": [
    {
      "tzid": "Europe/London",
      "etag": "873664-1510059107",
      "last-modified": "2017-11-07T12:51:47Z",
      "publisher": "IANA Time Zone Database",
      "version": "2017c",
      "aliases": [
        "GB",
        "GB-Eire",
        "Europe/Isle_of_Man",
        "Europe/Guernsey",
        "Europe/Belfast",
        "Europe/Jersey"
      ]
    }
  ]
}
```



In this example the client asks for the time zone corresponding to Urumqi, Xinjiang, China [[Urumqi](#)]. Note that there are two different time standards [[Xinjiang Time](#)] in use in this region.

>> Request <<

```
GET /tzdist/zones?location=geo:43.825,87.6 HTTP/1.1
Host: tz.example.com
```

>> Response <<

```
HTTP/1.1 200 OK
Date: Fri, 09 Nov 2018 13:45:31 GMT
Content-Type: application/json; charset="utf-8"
Content-Length: xxxx
```

```
{
  "synctoken": "2860088640-1517192208",
  "timezones": [
    {
      "tzid": "Asia/Shanghai",
      "etag": "914662-1517192208",
      "last-modified": "2018-01-29T02:16:48Z",
      "publisher": "IANA",
      "version": "2018c",
      "aliases": [
        "Asia/Chungking",
        "Asia/Harbin",
        "Asia/Chongqing",
        "PRC"
      ]
    },
    {
      "tzid": "Asia/Urumqi",
      "etag": "229038-1517192208",
      "last-modified": "2018-01-29T02:16:48Z",
      "publisher": "IANA",
      "version": "2018c",
      "aliases": [
        "Asia/Kashgar"
      ]
    }
  ]
}
```





In this example the client asks for the timezone corresponding to the Niagara Falls [\[NE\]](#) with an uncertainty of 50m. Note that the cataracts are located on the border of Ontario, Canada, and New York, United States, and therefore straddle a time zone boundary.

>> Request <<

```
GET /tzdist/zones?location=geo:43.0799,-79.0747;u=50 HTTP/1.1
Host: tz.example.com
```

>> Response <<

```
HTTP/1.1 200 OK
Date: Fri, 09 Nov 2018 13:58:07 GMT
Content-Type: application/json; charset="utf-8"
Content-Length: xxxx
```

```
{
  "synctoken": "2860088640-1510059107",
  "timezones": [
    {
      "tzid": "America/New_York",
      "etag": "6602582-1510059107",
      "last-modified": "2017-11-07T12:51:47Z",
      "publisher": "IANA Time Zone Database",
      "version": "2017c",
      "aliases": [
        "US/Eastern"
      ]
    },
    {
      "tzid": "America/Toronto",
      "etag": "3297806-1510059107",
      "last-modified": "2017-11-07T12:51:47Z",
      "publisher": "IANA Time Zone Database",
      "version": "2017c",
      "aliases": [
        "America/Montreal",
        "Canada/Eastern"
      ]
    }
  ]
}
```



## 4. Security Considerations

This specification does not introduce any additional security concerns beyond those described in [Section 8 of \[RFC7808\]](#).

## 5. Privacy Considerations

A client that uses this extension will leak the precise location of a user's device. The strategies described in [Section 9 of \[RFC7808\]](#) can be used to diminish the ability of an untrusted server or network observer to track the device.

## 6. IANA Considerations

### 6.1. Service Action Registration

This document defines the following new TZDIST Service Action to be added to the registry defined in [Section 10.3.1 of \[RFC7808\]](#):

+-----+-----+		
Action Name	Reference	
+-----+-----+		
geolocate	RFCXXXX, <a href="#">Section 3</a>	
+-----+-----+		

### 6.2. Registration of invalid-location Error URN

This section registers the "urn:ietf:params:tzdist:error:invalid-location" URN in the "TZDIST Identifiers" registry defined in [Section 10.4 of \[RFC7808\]](#).

URN: urn:ietf:params:tzdist:error:invalid-location

Description: Error code for incorrect use of the "location" URI query parameter.

Specification: RFCXXXX, [Section 3](#)

Contact: IESG <iesg@ietf.org>

Index value: N/A.

## 7. Acknowledgments

The author would like to thank the following individuals for contributing their ideas and support for writing this specification: Cyrus Daboo, Michael Douglass, Paul Eggert, Eliot Lear, and Daniel Migault.



## 8. References

### 8.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC5870] Mayrhofer, A. and C. Spanring, "A Uniform Resource Identifier for Geographic Locations ('geo' URI)", [RFC 5870](#), DOI 10.17487/RFC5870, June 2010, <<https://www.rfc-editor.org/info/rfc5870>>.
- [RFC7807] Nottingham, M. and E. Wilde, "Problem Details for HTTP APIs", [RFC 7807](#), DOI 10.17487/RFC7807, March 2016, <<https://www.rfc-editor.org/info/rfc7807>>.
- [RFC7808] Douglass, M. and C. Daboo, "Time Zone Data Distribution Service", [RFC 7808](#), DOI 10.17487/RFC7808, March 2016, <<https://www.rfc-editor.org/info/rfc7808>>.

### 8.2. Informative References

- [NF] Wikipedia, "Niagara Falls", <[https://en.wikipedia.org/wiki/Niagara\\_Falls](https://en.wikipedia.org/wiki/Niagara_Falls)>.
- [ROG] Wikipedia, "Royal Observatory, Greenwich", <[https://en.wikipedia.org/wiki/Royal\\_Observatory,\\_Greenwich](https://en.wikipedia.org/wiki/Royal_Observatory,_Greenwich)>.
- [TZBB] Siroky, E., "Timezone Boundary Builder", <<https://github.com/evansiroky/timezone-boundary-builder>>.
- [Urumqi] Wikipedia, "Urumqi", <<https://en.wikipedia.org/wiki/Urumqi>>.
- [Xinjiang\_Time] Wikipedia, "Xinjiang Time", <[https://en.wikipedia.org/wiki/Xinjiang\\_Time](https://en.wikipedia.org/wiki/Xinjiang_Time)>.

## **Appendix A. Change History (To be removed by RFC Editor before publication)**

Changes since -02:

- o Made it clear that this extension is primarily for use by mobile devices.



- o Made it clear that multiple time zones may be returned for a specified location (with example).
- o Minor editorial changes.

Changes since -01:

- o Minor editorial changes.

Changes since -00:

- o Updated author information.
- o Changed locations used in examples.
- o Closed issue "percent-encode 'geo' URI value" as unnecessary.
- o Closed issue "advertise supported coordinate reference system" as unnecessary (only "wgs84" is defined for [RFC 5870](#)).
- o Closed issue "discuss territorial and/or international waters" as unnecessary.
- o Added privacy concern.
- o Minor editorial changes.

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