

## Location Types Registry

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### Abstract

This document creates a registry for describing the types of places a human or end system might be found. The registry is then referenced by other protocols that need a common set of location terms as protocol constants. Examples of location terms defined in this document include aircraft, office, and train station.

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## 1. Introduction

This document creates a registry for location type tokens. We anticipate that the network, through configuration or management protocols, tells a mobile device what kind of location it finds itself in. The device and associated software can then tailor its behavior to the environment. For example, this document defines the terms "classroom", "place-of-worship", and "theater". A considerate owner of a cell phone might program the device to switch from ringer to vibrate mode in such environments. Just knowing the geographic location, be it as civic (street address) or geospatial coordinates, would generally not allow the device to make a similar decision.

Naturally, the number of descriptive terms for physical environments is almost unbounded. This registry tries to identify common terms that are likely to be useful for communications devices and for controlling and guiding communications behavior. The terms roughly correspond to the level of details of location descriptions and icons found on geographic maps, for example, and are meant to be in common use across a variety of cultures and countries. The registration process described in the IANA Considerations section allows this list to be extended as needed, while aiming to prevent an unnecessary explosion in the registry.

The use of tokens (i.e., protocol constants) makes it easier to build systems across multiple languages. A user interface can readily translate a finite set of tokens to user-appropriate textual or iconic representations. Protocols using this registry are encouraged to provide additional mechanisms to accommodate location types not currently registered via free-text fields with appropriate language and character set labeling.

The terms defined in this registry do not attempt to provide a hierarchy of location descriptions, except in certain special cases. For example, the term "restaurant" is defined to include the term "cafe", and the term "public" encompasses a range of descriptors, as noted below. The registry makes these more generic terms available as often the more detailed distinctions may not be available, or privacy concerns suggest the use of less precise terms that are still sufficient to guide communications behavior or evaluate the source of a phone call or message, say.

In many cases, a location might be described by multiple terms that apply at the same time. For example, the combination of "restaurant" and "airport" is immediately recognizable. This registry makes no attempt to limit the number of terms that can be used to describe a single place or to restrict what combinations are allowed, given that there are few combinations that are physically impossible. Common

sense is probably a better guide here; the authors would not want to rule out creative business models such as combinations of "parking" and "restaurant" or "bar" and "hospital". The number of terms that can be used within the same protocol element is left to the protocol description.

This document does not describe how the values of the registry are to be used, as this description is provided by other documents. For example, [5] describes options for carrying civic address information, including the place type attributes listed in this document, using the Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6). A usage for Remote Authentication Dial-In User Service (RADIUS) is described in [6], where this information is conveyed from the RADIUS client to the RADIUS server. Rich presence (RPID [4]) also utilizes the values of the location types registry.

## 2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [1].

## 3. Location Types

This section describes types of locations where an entity is located. The entity is not further specified and can be a person or an object such as a network access point or end system.

aircraft: A device that is used or intended to be used for flight in the air, such as an airplane, helicopter, gyroplane, glider, or lighter-than-air devices like a balloon.

airport: A place from which aircrafts operate, such as an airport or heliport.

arena: Enclosed area used for sports events.

automobile: An automotive vehicle, usually four-wheeled, designed for passenger transportation, such as a car.

bank: Business establishment in which money is kept for saving, commercial purposes, is invested, supplied for loans, or exchanged.

bar: A bar or saloon.

bicycle: A vehicle with two wheels tandem, a steering handle, a saddle seat, and pedals by which it is propelled.

- bus: A large motor vehicle designed to carry passengers.
- bus-station: Terminal that serves bus passengers, such as a bus depot or bus terminal.
- cafe: Usually a small and informal establishment that serves various refreshments (such as coffee); coffee shop.
- classroom: Academic classroom or lecture hall.
- club: Dance club, nightclub, or discotheque.
- construction: Construction site.
- convention-center: Convention center or exhibition hall.
- government: Government building, such as those used by the legislative, executive, or judicial branches of governments, including court houses, police stations, and military installations.
- hospital: Hospital, hospice, medical clinic, mental institution, or doctor's office.
- hotel: Hotel, motel, inn, or other lodging establishment.
- industrial: Industrial setting, such as a manufacturing floor or power plant.
- library: Library or other public place in which literary and artistic materials, such as books, music, periodicals, newspapers, pamphlets, prints, records, and tapes, are kept for reading, reference, or lending.
- motorcycle: A two-wheeled automotive vehicle, including a scooter.
- office: Business setting, such as an office.
- other: A place without a registered place type representation.
- outdoors: Outside a building, in or into the open air, such as a park or city streets.
- parking: A parking lot or parking garage.
- place-of-worship: A religious site where congregations gather for religious observances, such as a church, chapel, meetinghouse, mosque, shrine, synagogue, or temple.

- prison: Correctional institution where persons are confined while on trial or for punishment, such as a prison, penitentiary, jail, brig.
- public: Public area such as a shopping mall, street, park, public building, train station, or airport or in public conveyance such as a bus, train, plane, or ship. This general description encompasses the more precise descriptors 'street', 'public-transport', 'aircraft', 'bus', 'bus-station', 'train', 'train-station', 'airport', 'shopping-area', 'outdoors', and 'watercraft'.
- public-transport: Any form of public transport, including aircraft, bus, train, or ship.
- residence: A private or residential setting, not necessarily the personal residence of the entity, e.g., including a friend's home.
- restaurant: Restaurant, coffee shop, or other public dining establishment.
- school: School or university property, but not necessarily a classroom or library.
- shopping-area: Shopping mall or shopping area. This area is a large, often enclosed, shopping complex containing various stores, businesses, and restaurants usually accessible by common passageways.
- stadium: Large, usually open structure for sports events, including a racetrack.
- store: Place where merchandise is offered for sale, such as a shop.
- street: A public thoroughfare, such as an avenue, street, alley, lane, or road, including any sidewalks.
- theater: Theater, lecture hall, auditorium, classroom, movie theater, or similar facility designed for presentations, talks, plays, music performances, and other events involving an audience.
- train: Train, monorail, maglev, cable car, or similar conveyance.
- train-station: Terminal where trains load or unload passengers or goods; railway station, railroad station, railroad terminal, train depot.

truck: An automotive vehicle suitable for hauling, used primarily to carry goods rather than people.

underway: In a land-, water-, or aircraft that is underway (in motion).

unknown: The type of place is unknown.

warehouse: Place in which goods or merchandise are stored, such as a storehouse or self-storage facility.

water: In, on, or above bodies of water, such as an ocean, lake, river, canal, or other waterway.

watercraft: On a vessel for travel on water such as a boat or ship.

#### 4. Schema

This registry can be used in two ways, first, as a list of tokens, to be referenced by appropriate protocols that accept textual tokens, and second, as a schema, with its own namespace, referenced by other schema, either explicitly or via namespace="##other".

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="urn:ietf:params:xml:ns:location-type"
  xmlns="urn:ietf:params:xml:ns:location-type"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

  <xs:complexType name="empty"/>

  <xs:complexType name="Note_t">
    <xs:simpleContent>
      <xs:extension base="xs:string">
        <xs:attribute ref="xml:lang"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>

  <xs:element name="aircraft" type="empty" />
  <xs:element name="airport" type="empty" />
  <xs:element name="arena" type="empty" />
  <xs:element name="automobile" type="empty" />
  <xs:element name="bank" type="empty" />
  <xs:element name="bar" type="empty" />
  <xs:element name="bicycle" type="empty" />
  <xs:element name="bus" type="empty" />
```

```
<xs:element name="bus-station" type="empty" />
<xs:element name="cafe" type="empty" />
<xs:element name="classroom" type="empty" />
<xs:element name="club" type="empty" />
<xs:element name="construction" type="empty" />
<xs:element name="convention-center" type="empty" />
<xs:element name="government" type="empty" />
<xs:element name="hospital" type="empty" />
<xs:element name="hotel" type="empty" />
<xs:element name="industrial" type="empty" />
<xs:element name="library" type="empty" />
<xs:element name="motorcycle" type="empty" />
<xs:element name="office" type="empty" />
<xs:element name="other" type="Note_t"/>
<xs:element name="outdoors" type="empty" />
<xs:element name="parking" type="empty" />
<xs:element name="place-of-worship" type="empty" />
<xs:element name="prison" type="empty" />
<xs:element name="public" type="empty" />
<xs:element name="public-transport" type="empty" />
<xs:element name="residence" type="empty" />
<xs:element name="restaurant" type="empty" />
<xs:element name="school" type="empty" />
<xs:element name="shopping-area" type="empty" />
<xs:element name="stadium" type="empty" />
<xs:element name="store" type="empty" />
<xs:element name="street" type="empty" />
<xs:element name="theater" type="empty" />
<xs:element name="train" type="empty" />
<xs:element name="train-station" type="empty" />
<xs:element name="truck" type="empty" />
<xs:element name="underway" type="empty" />
<xs:element name="unknown" type="empty" />
<xs:element name="warehouse" type="empty" />
<xs:element name="water" type="empty" />
<xs:element name="watercraft" type="empty" />
</xs:schema>
```

## 5. IANA Considerations

### 5.1. Registering Tokens

This document creates new IANA registries for location types as listed in Section 3, starting with 'aircraft' and finishing with 'watercraft'.

IANA will maintain this registry both in the form of an XML schema and a list of tokens, with the same content.

Following the policies outline in RFC 2434 [2], new tokens are assigned after Expert Review. The Expert Reviewer will generally consult the IETF GeoPRIV working group mailing list or its designated successor. Updates or deletions of tokens from the registration follow the same procedures.

The expert review should be guided by a few common sense considerations. For example, tokens should not be specific to a country, region, organization, or company; they should be well-defined and widely recognized. The expert's support of IANA will include providing IANA with the new token(s) when the update is provided only in the form of a schema, and providing IANA with the new schema element(s) when the update is provided only in the form of a token.

To ensure widespread usability across protocols, tokens MUST follow the character set restrictions for XML Names [3].

Each registration must include the name of the token and a brief description similar to the ones offered herein for the initial registrations contained this document:

Token Identifier: Identifier of the token.

Description: Brief description indicating the meaning of the token, including one or more examples where the term encompasses several more precise terms.

XML namespace: Tokens MAY be used as elements within other appropriate XML documents. Each token lists the namespace it is part of, typically urn:ietf:params:xml:ns:location-type:ext, where 'ext' is the name of the extension.

Note that the usage of these tokens is not limited to XML and the 'Token Identifier' is the XML element content and not the XML element name.

#### 5.2. URN Sub-Namespace Registration for urn:ietf:params:xml:ns:location-type

URI: urn:ietf:params:xml:ns:location-type

Description: This is the XML namespace for XML elements defined by RFC4589 to describe location types within XML documents.

Registrant Contact: IETF, GEOPRIV working group, geopriv@ietf.org,  
Henning Schulzrinne, hgs@cs.columbia.edu

XML:

BEGIN

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML Basic 1.0//EN"
"http://www.w3.org/TR/xhtml-basic/xhtml-basic10.dtd">
<html xmlns="http://www.w3.org/1999/xhtml
<head>
  <meta http-equiv="content-type"
  content="text/html; charset=iso-8859-1"/>
  <title>Location Types Registry</title>
</head>
<body>
  <h1>Namespace for Location Types</h1>
  <h2>urn:ietf:params:xml:ns:location-type</h2>
  <p>See <a href="ftp://ftp.rfc-editor.org/in-notes/rfc4589.txt">
    RFC4589</a>.</p>
</body>
</html>
END
```

### 5.3. Schema Registration for Schema

urn:ietf:params:xml:ns:location-type

URI: urn:ietf:params:xml:ns:location-type

Registrant Contact: IESG

XML: See Section 4

## 6. Internationalization Considerations

The location type values listed in this document MUST NOT be presented to the user. The values therefore have the characteristic of tokens or tags and no internationalization support is required.

## 7. Security Considerations

This document defines a registry for location types and as such does not raise security issues.

## 8. Acknowledgements

Vijay Gurbani, Paul Kyzivat, and Jonathan Rosenberg contributed to RPID [4], which led to the location types listed in this document. Many thanks to Harald Alvestrand, Frank Ellermann, Bill Fenner, Ted Hardie, David Kessens, Allison Mankin, Jon Peterson, and Sam Hartman for their suggestions. Rick Jones pointed us to the Global Justice

XML work (see <http://it.ojp.gov/jxdm/>) that helped us to add more values to the location registry.

Some of the definitions are derived from the Merriam-Webster Online Dictionary.

## 9. References

### 9.1. Normative References

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
- [2] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 2434, October 1998.
- [3] Sperberg-McQueen, C., Maler, E., Bray, T., Paoli, J., and F. Yergeau, "Extensible Markup Language (XML) 1.0 (Third Edition)", World Wide Web Consortium Recommendation <http://www.w3.org/TR/2004/REC-xml-20040204>, February 2004.

### 9.2. Informative References

- [4] Schulzrinne, H., "RPID: Rich Presence Extensions to the Presence Information Data Format (PIDF)", Work in Progress, December 2005.
- [5] Schulzrinne, H., "Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information", Work in Progress, January 2006.
- [6] Tschofenig, H., "Carrying Location Objects in RADIUS", Work in Progress, March 2006.

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