

**Revised Civic Location Format for PIDF-LO
draft-ietf-geopriv-revised-civic-lo-00.txt**

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Abstract

This document defines an XML format for the representation of civic location. This format is designed for use with PIDF Location Object (PIDF-LO) documents. The format is based on the civic address definition in PIDF-LO, but adds several new elements based on the civic types defined for DHCP, and adds a hierarchy to address complex road identity schemes. The format also includes support for the xml:lang language tag and restricts the types of elements where appropriate.

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1. Introduction

Since the publication of the original PIDF-LO civic specification, in [[I-D.ietf-geopriv-pidf-lo](#)], it has been found that the specification is lacking a number of additional parameters that can be used to more precisely specify a civic location. These additional parameters have been largely captured in [[I-D.ietf-geopriv-dhcp-civil](#)].

This document revises the GEOPRIV civic form to include the additional civic parameters captured in [[I-D.ietf-geopriv-dhcp-civil](#)]. The document also introduces a hierarchical structure for thoroughfare (road) identification which is employed in some countries. New elements are defined to allow for even more precision in specifying a civic location.

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 [[RFC2119](#)].

The term "thoroughfare" is used in this document to describe a road or part of a road or other access route along which a final point is identified. This is consistent with the definition used in [[S42](#)].

3. Changes from PIDF-LO

3.1. Additional Civic Address Types

[I-D.ietf-geopriv-dhcp-civil] provides a full set of parameters that may be used to describe a civic location. Specifically [I-D.ietf-geopriv-dhcp-civil] lists several civic address types (CAtypes) that require support in the formal PIDF-LO definition that are not in [I-D.ietf-geopriv-pidf-lo]. Additional CAtypes are registered in [Section 7.3](#).

These changes include and new elements that are required to support more complex structures for naming street addresses, this is described in more detail in [Section 3.2](#).

New Civic Field	CAtype	Description	Example
BLD	24	Building (structure)	Hope Theatre
UNIT	26	Unit (apartment, suite)	12a
ROOM	28	Room	450F
SEAT	33	Seat (desk, cubicle, workstation)	WS 181
PLC	29	Place-type	office
POBOX	31	Post office box (P.O. box)	U40
ADDCODE	32	Additional Code	13203000003
RD	TBA	Primary road or street	Broadway
RDSEC	TBA	Road section	14
RDBR	TBA	Road branch	Lane 7
RDSUBBR	TBA	Road sub-branch	Alley 8

Table 1: New Civic PIDF-LO Types

Building: The "building" (BLD) conveys the name of a single building if the street address includes more than one building or the building name is helpful in identifying the location. (For example, on university campuses, the house number is often not displayed on buildings, while the building name is prominently shown.)

Unit: The "unit" (UNIT) contains the name or number of a part of a structure where there are separate administrative units, owners or tenants, such as separate companies or families who occupy that structure. Common examples include suite or apartment designations.

Room: A "room" (ROOM) is the smallest identifiable subdivision of a structure.

Seat: The "seat" element (SEAT) describes a single place where a person might sit. Common examples include a seat in a theatre and a cubicle in a cube farm.

Place type: The "type of place" element (PLC) describes the type of place described by the civic coordinates. For example, it describes whether it is a home, office, street or other public space. The values are drawn from the items in the location types registry [[I-D.ietf-geopriv-location-types-registry](http://tools.ietf.org/html/rfc4919)]. This information makes it easy, for example, for the DHCP client to then populate the presence information.

Post office box: The "post office box" element (POBOX) describes a container, such as a pigeon hole, at a central mailing location, where mail is held.

Additional code: The "additional code" item (ADDCODE) provides an additional, country-specific code identifying the location. For example, for Japan, it contains the Japan Industry Standard (JIS) address code. The JIS address code provides a unique address inside of Japan, down to the level of indicating the floor of the building.

Primary Road Name: The "primary road name" item (RD) is the name given to the root road or street associated with the address. In many cases this will be the name of the road or street on which an office or house exists, in some cases it will be the name of road or street from which more granular information stems. In most countries, this field should be used in preference to the "A6" element, which was previously used for street information.

Road Section: The "road section" item (RDSEC) is an identifier that represents a specific section or stretch of a primary road. This is a new thoroughfare element and is useful where a primary road reuses street numbering, or branch street names and there is no other way to identify that this has occurred, such as a change in municipality or suburb.

Branch Road Name: The "branch road name" item (RDBR) represents the name or identifier of a road/street that intersects or is associated with a primary road. The road branch is a new thoroughfare element and is envisaged being used where branch roads along a primary road reuse names and there is no other way, other than the road section (RDSEC) identifier, to discern a difference between them, such as a change in municipality or suburb.

Sub-Branch Road Name: The "sub-branch road name" item (RDSUBBR) represents the name or identifier of a road/street that intersects or is associated with a branch road (RDBR). The road sub-branch is a new thoroughfare element and is envisaged being used where sub-branch roads reuse names and there is no way, other than the road section (RDSEC) identifier, to discern a difference between them, such as a change in municipality or suburb.

3.2. New Thoroughfare Elements

In some countries a thoroughfare can be broken up into sections, and it is not uncommon for street numbers to be repeated between sections. A road section identifier is required to ensure that an address is unique. For example, "West Alice Parade" has 5 sections, each numbered from 1; unless the section is specified "7 West Alice Parade" could exist in 5 different places. The "RDSEC" element is used to specify the section.

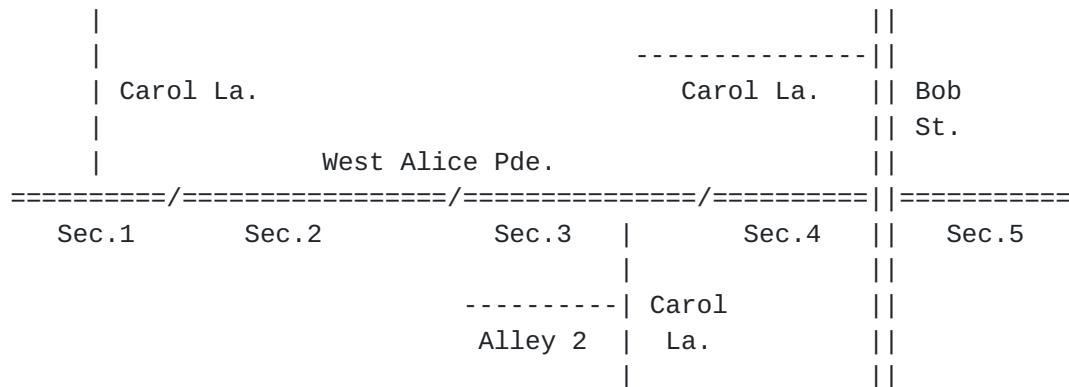
Minor streets can share the same name, so that they can only be distinguished by the major thoroughfare with which they intersect. For example, both "West Alice Parade, [Section 3](#)" and "Bob Street" could both be interested by a "Carol Lane". The "RDBR" element is used to specify a road branch where the name of the branch does not uniquely identify the road. Road branches MAY also be used where a major thoroughfare is split into sections.

Similar to the way that a road branch is associated with a road, a road sub-branch is associated with a road branch. The "RDSUBBR" element is used to identify road sub-branches.

The "A6" element is retained for use in those countries that require this level of detail. Where "A6" was previously used for street

names, it MUST NOT be used, the "RD" element MUST be used for thoroughfare data.

The following example figure shows a fictional arrangement of roads where these new thoroughfare elements are applicable.



3.2.1. Street Numbering

The introduction of new thoroughfare elements affects the interpretation of several of more specific civic address data. In particular, street numbering (the "HNO" element) applies to the most specific road element specified. That is, the first specified element from: "RDSUBBR", "RDBR", "RDSEC", or "RD".

3.2.2. Directionals and other Qualifiers

The "PRD", "POD" and "STS" elements always apply to the value of the "RD" element only. If road branches or sub-branches require street suffixes or qualifiers, they MUST be included in the "RDBR" or "RDSUBBR" element text.

In PIDF-LO [[I-D.ietf-geopriv-pidf-lo](#)], examples and descriptions for the "PRD" and "POD" elements focussed on these qualifiers being directionals, for example North, South etc. This derives from their use in North America, where the name is derived from (pre-directional and post-directional respectively). However in quite a number of cities and countries around the world a street prefix may be something other than a directional, for example "Little" or "Lower". The Universal Postal Union (UPU) standard [[S42](#)] refers to these items as "thoroughfare qualifiers" and allows any value for these fields. This specification extends the allowed values for the "PRD" and "POD" elements to include any value.

To avoid confusion it is RECOMMENDED that where the "PRD" and "POD" elements are used to represent something other than a directional that the values be explicit such as "Little" and not an abbreviation

such as "Lt".

3.3. Country Element

The "country" element differs from that defined in [I-D.ietf-geopriv-pidf-lo] in that it now restricts the value space of the element to two upper case characters, which more closely matches the definition in [ISO.3166.1988].

3.4. Languages and Scripts

The XML schema defined for civic addresses allows for the addition of the "xml:lang" attribute to all elements except "country" and "PLC", which both contain enumerated values.

The "script" field defined in [I-D.ietf-geopriv-dhcp-civil] is omitted in favour of using the "xml:lang" attribute.

It is RECOMMENDED that each "civicAddress" element use one language only, or a combination of languages that is consistent. Where a civic location is represented in multiple languages multiple "civicAddress" elements SHOULD be included in the PIDF-LO document.

3.5. Whitespace

The XML schema [W3C.REC-xmlschema-2-20041028] defined in [Section 4](#) uses a base type of "token" instead of "string" as used in [I-D.ietf-geopriv-pidf-lo].

The "token" type ensures that whitespace within instance documents is normalized and collapsed before being passed to a processor. This ensures that the following fragments are considered equivalent by XML processors:

```
<A1>New South Wales</A1>
```

```
<A1>New  
  South Wales</A1>
```

```
<A1>  
  New  South  
  Wales    </A1>
```

Whitespace may still be included in values by using character references, such as " ".

4. Civic Address Schema

```
<?xml version="1.0"?>
<xs:schema
  targetNamespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ca="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  elementFormDefault="qualified" attributeFormDefault="unqualified">

  <xs:import namespace="http://www.w3.org/XML/1998/namespace"
    schemaLocation="http://www.w3.org/2001/xml.xsd"/>

  <xs:simpleType name="iso3166">
    <xs:restriction base="xs:token">
      <xs:pattern value="[A-Z]{2}"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:complexType name="caType">
    <xs:simpleContent>
      <xs:extension base="xs:token">
        <xs:attribute ref="xml:lang" use="optional"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>

  <xs:element name="civicAddress" type="ca:civicAddress"/>
  <xs:complexType name="civicAddress">
    <xs:sequence>
      <xs:element name="country" type="ca:iso3166" minOccurs="0"/>
      <xs:element name="A1" type="ca:caType" minOccurs="0"/>
      <xs:element name="A2" type="ca:caType" minOccurs="0"/>
      <xs:element name="A3" type="ca:caType" minOccurs="0"/>
      <xs:element name="A4" type="ca:caType" minOccurs="0"/>
      <xs:element name="A5" type="ca:caType" minOccurs="0"/>
      <xs:element name="A6" type="ca:caType" minOccurs="0"/>
      <xs:element name="PRD" type="ca:caType" minOccurs="0"/>
      <xs:element name="RD" type="ca:caType" minOccurs="0"/>
      <xs:element name="STS" type="ca:caType" minOccurs="0"/>
      <xs:element name="POD" type="ca:caType" minOccurs="0"/>
      <xs:element name="RDSEC" type="ca:caType" minOccurs="0"/>
      <xs:element name="RDBR" type="ca:caType" minOccurs="0"/>
      <xs:element name="RDSUBBR" type="ca:caType" minOccurs="0"/>
      <xs:element name="HNO" type="ca:caType" minOccurs="0"/>
      <xs:element name="HNS" type="ca:caType" minOccurs="0"/>
      <xs:element name="LMK" type="ca:caType" minOccurs="0"/>
      <xs:element name="LOC" type="ca:caType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```



```
<xs:element name="FLR" type="ca:caType" minOccurs="0"/>
<xs:element name="NAM" type="ca:caType" minOccurs="0"/>
<xs:element name="PC" type="ca:caType" minOccurs="0"/>
<xs:element name="BLD" type="ca:caType" minOccurs="0"/>
<xs:element name="UNIT" type="ca:caType" minOccurs="0"/>
<xs:element name="ROOM" type="ca:caType" minOccurs="0"/>
<xs:element name="SEAT" type="ca:caType" minOccurs="0"/>
<xs:element name="PLC" type="xs:token" minOccurs="0"/>
<xs:element name="POBOX" type="ca:caType" minOccurs="0"/>
<xs:element name="ADDCODE" type="ca:caType" minOccurs="0"/>
<xs:any namespace="##other" processContents="lax"
    minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute ref="xml:lang" use="optional"/>
</xs:complexType>
</xs:schema>
```


5. Example

```
<?xml version="1.0"?>
<civicAddress xml:lang="en-AU"
  xmlns="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr">
  <country>AU</country>
  <A1> New South Wales </A1>
  <A3>      Wollongong
</A3><A4>North Wollongong
</A4>
  <PRD>Corner</PRD><RD>Flinders</RD><STS>Street</STS>
  <RDBR>Campbell Street</RDBR>
  <LMK>
    Gilligan's Island
  </LMK>
  <NAM> Video Rental Store </NAM>
  <PC>2500</PC>
  <ROOM> Westerns and Classics </ROOM>
  <PLC>store</PLC>
  <POBOX>Private Box 15</POBOX>
</civicAddress>
```


6. Security Considerations

The XML representation described in this document is designed for inclusion in a PIDF-LO document. As such, it is subject to the same security considerations as are described in [\[I-D.ietf-geopriv-pidf-lo\]](#). Considerations relating to the inclusion of this representation in other XML documents are outside the scope of this document.

7. IANA Considerations

7.1. URN sub-namespace registration for

'urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr'

This document calls for IANA to register a new XML namespace, as per the guidelines in [[RFC3688](#)].

URI: urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr

Registrant Contact: IETF, GEOPRIV working group (geopriv@ietf.org),
Martin Thomson (martin.thomson@andrew.com).

XML:

```
BEGIN
  <?xml version="1.0"?>
  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
  <html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
    <head>
      <title>GEOPRIV Civic Address</title>
    </head>
    <body>
      <h1>Format for Distributing Civic Address in GEOPRIV</h1>
      <h2>urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr</h2>
      [[NOTE TO IANA/RFC-EDITOR: Please update RFC URL and replace XXXX
        with the RFC number for this specification.]]
      <p>See <a href="[[RFC URL]]">RFCXXXX</a>.</p>
    </body>
  </html>
END
```

7.2. XML Schema Registration

This section registers an XML schema as per the procedures in [[RFC3688](#)].

URI: urn:ietf:params:xml:schema:pidf:geopriv10:civicAddr

Registrant Contact: IETF, GEOPRIV working group, (geopriv@ietf.org),
Martin Thomson (martin.thomson@andrew.com).

The XML for this schema can be found as the entirety of [Section 4](#) of this document.

7.3. CAtype registration

This section registers CAtype codes in accordance with [I-D.ietf-geopriv-dhcp-civil].

7.3.1. Primary Thoroughfare CAtype

This section registers the primary thoroughfare CAtype (RD).

CAtype: TBA

Brief description: The name of a primary thoroughfare, not including any qualifiers.

Reference to published specification: Please refer to RFCXXXX [[NOTE TO IANA/RFC-EDITOR: Please replace XXXX with the RFC number for this specification.]]

Country-specific considerations: None

7.3.2. Thoroughfare Section CAtype

This section registers the thoroughfare section CAtype (RDSEC).

CAtype: TBA

Brief description: An identifier identifying a specific section or stretch of a primary thoroughfare.

Reference to published specification: Please refer to RFCXXXX [[NOTE TO IANA/RFC-EDITOR: Please replace XXXX with the RFC number for this specification.]]

Country-specific considerations: None

7.3.3. Thoroughfare Branch CAtype

This section registers the thoroughfare branch CAtype (RDBR).

CAtype: TBA

Brief description: The name of a secondary thoroughfare or thoroughfare branch.

Reference to published specification: Please refer to RFCXXXX [[NOTE TO IANA/RFC-EDITOR: Please replace XXXX with the RFC number for this specification.]]

Country-specific considerations: None

7.3.4. Thoroughfare Sub-Branch CAtype

This section registers the thoroughfare sub-branch CAtype (RDSUBBR).

CAtype: TBA

Brief description: The name of a tertiary thoroughfare or thoroughfare sub-branch.

Reference to published specification: Please refer to RFCXXXX [[NOTE TO IANA/RFC-EDITOR: Please replace XXXX with the RFC number for this specification.]]

Country-specific considerations: None

8. References

8.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [W3C.REC-xmlschema-2-20041028]
Malhotra, A. and P. Biron, "XML Schema Part 2: Datatypes Second Edition", W3C REC REC-xmlschema-2-20041028, October 2004.
- [I-D.ietf-geopriv-dhcp-civil]
Schulzrinne, H., "Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information", [draft-ietf-geopriv-dhcp-civil-07](#) (work in progress), September 2005.
- [I-D.ietf-geopriv-location-types-registry]
Schulzrinne, H. and H. Tschofenig, "Location Types Registry", [draft-ietf-geopriv-location-types-registry-03](#) (work in progress), August 2005.
- [ISO.3166.1988]
International Organization for Standardization, "Codes for the representation of names of countries, 3rd edition", ISO Standard 3166, August 1988.

8.2. Informative References

- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), January 2004.
- [I-D.ietf-geopriv-pidf-lo]
Peterson, J., "A Presence-based GEOPRIV Location Object Format", [draft-ietf-geopriv-pidf-lo-03](#) (work in progress), September 2004.
- [S42] Universal Postal Union (UPU), "International Postal Address Components and Templates", UPS SB42-4, July 2004.

Appendix A. Acknowledgements

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