Flow Identity Extension for HELD
draft-bellis-geopriv-flow-identity-01

Abstract

Identity Extensions using an IP address and port number to request a location based on an individual packet flow have been previously specified by the GEOPRIV Working Group.

However certain kinds of NAT require that identifiers for both ends of the packet flow must be specified in order to unambiguously satisfy the location request.

This document specifies a Flow Identity Extension for the HTTP-Enabled Location Delivery (HELD) Protocol to support this requirement.

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at http://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on November 15, 2012.

Copyright Notice

Copyright (c) 2012 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust’s Legal Provisions Relating to IETF Documents
Table of Contents

1. Introduction .......................................................... 3
2. Conventions used in this document ................................. 4
3. Usage ................................................................. 5
4. XML Schema .......................................................... 6
5. IANA Considerations ................................................ 8
   5.1. URN Sub-Namespace Registration for
        urn:ietf:params:xml:ns:geopriv:held:flow ....................... 8
   5.2. XML Schema Registration ...................................... 8
6. Privacy Considerations ............................................. 9
7. Security Considerations ........................................... 10
8. References .......................................................... 11
   8.1. Normative References ......................................... 11
   8.2. Informative References ....................................... 11
Author’s Address ....................................................... 12
1. Introduction

Work at the Emergency Location Working Group of NICC Standards Ltd (the UK’s telecoms standards body) prompted the addition of Port Number identifiers in HELD Identity [RFC6155] to allow HELD [RFC5985] requests for target Devices that are behind a NAT device.

Subsequent analysis has determined that in the presence of particular types of NAT device, and in particular Carrier Grade NATs, it is necessary to know the complete tuple of (layer 3 protocol, layer 4 protocol, source address, source port, destination address, destination port) in order to unambiguously identify a flow, and therefore the true target Device.

This document creates an XML Schema and URN Sub-Namespace for a Flow Identity Extension to support this requirement.
2. Conventions used in this document

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].
3. Usage

An example HELD request is show below:

```xml
<locationRequest xmlns="urn:ietf:params:xml:ns:geopriv:held"
    responseTime="8">
  <locationType exact="true">geodetic</locationType>
  <flow xmlns="urn:ietf:params:xml:ns:geopriv:held:flow"
      layer4="tcp" layer3="ipv4">
    <src>
      <address>192.168.1.1</address>
      <port>1024</port>
    </src>
    <dst>
      <address>10.0.0.1</address>
      <port>80</port>
    </dst>
  </flow>
</locationRequest>
```

The `<flow>` element MUST contain:

- a "layer3" attribute with a value of "ipv4" or "ipv6".
- a "layer4" attribute with a value of "udp" [RFC0768], "tcp" [RFC0793], "sctp" [RFC4960], "dccp" [RFC4340], or a decimal integer representing any applicable protocol from the IANA Assigned Internet Protocol Numbers Registry.

and MAY optionally contain:

- a "target" attribute with a value of "src" (default) or "dst" to indicate which end of the flow is the "target" of the `<locationRequest>` with respect to the HELD protocol.
4. XML Schema

```xml
<?xml version="1.0" encoding="UTF-8"?>
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:flow="urn:ietf:params:xml:ns:geopriv:held:flow"
    elementFormDefault="qualified">

    <xs:annotation>
        <xs:appinfo
            source="urn:ietf:params:xml:schema:geopriv:held:flow">
            HELD Flow Identity</xs:appinfo>
        <xs:documentation
            source="http://www.rfc-editor.org/rfc/rfcNEW1.txt">
            This document defines Flow Identity elements for HELD.
        </xs:documentation>
    </xs:annotation>

    <xs:element name="flow" type="flow:flowIdentity"/>

    <xs:complexType name="flowIdentity">
        <xs:sequence>
            <xs:element name="src" type="flow:flowEndpoint"/>
            <xs:element name="dst" type="flow:flowEndpoint"/>
        </xs:sequence>
        <xs:attribute name="target" default="src">
            <xs:simpleType>
                <xs:restriction base="xs:token">
                    <xs:pattern value="(src|dst)"/>
                </xs:restriction>
            </xs:simpleType>
        </xs:attribute>
        <xs:attribute name="layer3" use="required">
            <xs:simpleType>
                <xs:restriction base="xs:token">
                    <xs:pattern value="(ipv4|ipv6)"/>
                </xs:restriction>
            </xs:simpleType>
        </xs:attribute>
        <xs:attribute name="layer4" use="required">
            <xs:simpleType>
                <xs:restriction base="xs:token">
                    <xs:pattern value="(udp|tcp|sctp|dccp|\d+)"/>
                </xs:restriction>
            </xs:simpleType>
        </xs:attribute>
    </xs:complexType>
</xs:schema>
```
<xs:complexType name="flowEndpoint">
  <xs:all>
    <xs:element name="address">
      <xs:simpleType>
        <xs:restriction base="xs:string"/>
      </xs:simpleType>
    </xs:element>
    <xs:element name="port">
      <xs:simpleType>
        <xs:restriction base="xs:unsignedShort">
          <xs:minInclusive value="1"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:element>
  </xs:all>
</xs:complexType>
5. IANA Considerations

5.1. URN Sub-Namespace Registration for

   urn:ietf:params:xml:ns:geopriv:held:flow

This section registers a new XML namespace, "urn:ietf:params:xml:ns:geopriv:held:flow", as per the guidelines in [RFC3688].


Registrant Contact: IETF GEOPRIV Working Group (geopriv@ietf.org), Ray Bellis (ray.bellis@nominet.org.uk)

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>HELD Flow Identity Parameters</title>
  </head>
  <body>
    <h1>Namespace for HELD Flow Identity Parameters</h1>
    <h2>urn:ietf:params:xml:ns:geopriv:held:flow</h2>
  </body>
</html>
END

5.2. XML Schema Registration

This section registers an XML schema as per the guidelines in [RFC3688]


Registrant Contact: IETF GEOPRIV Working Group (geopriv@ietf.org), Ray Bellis (ray.bellis@nominet.org.uk)

Schema: The XML for this schema can be found as the entirety of Section 4 of this document.
6. Privacy Considerations

This document introduces no new privacy considerations beyond those in [RFC6155]
7. Security Considerations

This document introduces no new security considerations beyond those in [RFC6155]
8. References

8.1. Normative References


8.2. Informative References


Author’s Address

Ray Bellis
Nominet UK
Edmund Halley Road
Oxford OX4 4DQ
United Kingdom

Phone: +44 1865 332211
Email: ray.bellis@nominet.org.uk
URI: http://www.nominet.org.uk/