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LoST-based Discovery of Servers Distributing Alerts
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Abstract

The Common Alerting Protocol (CAP) is an XML document format for exchanging emergency alerts and public warnings. Different organizations issue alerts for specific geographic regions. The Location-to-Service Translation (LoST) protocol provides a way to discover servers that distribute these alerts for a geographical region. This document defines the Service Uniform Resource Names (URN)s for warnings in the same way as they have been defined with [RFC 5031](#) for citizen-to-authority emergency services. Additionally, this document suggests to use LoST for the discovery of servers distributing alerts.

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[1.](#) Introduction

The Common Alerting Protocol (CAP) is an XML document format for exchanging emergency alerts and public warnings. Different organizations issue alerts for specific geographical regions. The Location-to-Service Translation (LoST) protocol provides a way to discover servers that distribute these alerts for a geographical region. This document defines the Service Uniform Resource Names (URN)s for warnings in the same way as they have been defined with [RFC 5031](#) for citizen-to-authority emergency services. Additionally, this document suggests to use LoST for the discovery of servers distributing alerts.

[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 [RFC 2119](#) [[RFC2119](#)].

[3.](#) Protocol Semantics

This document makes use of LoST, [RFC 5222](#) [[RFC5222](#)]. However, instead of performing a translation from location information and a Service URN to a PSAP URI (plus supplementary information), as used with [[I-D.ietf-ecrit-phonebcp](#)] for the citizen-to-authority emergency services use case, the LoST client asks the LoST server for a URI to receive further information on how to obtain warning alerts. In a response the URIs in the <uri> element MUST be from the following format: sip, xmpp or http. The SIP URI MUST subsequently be used with [[I-D.rosen-sipping-cap](#)]. An XMPP URI MUST be used as described in [[XEP-0127](#)]. An HTTP URI MUST be used with GeoRSS ([Reference to be added.]).

In a LoST response the optional <serviceNumber> element is not used

by this specification. In mapping citizen-to-authority services, receiving multiple mappings is an exception. However, since many organizations may provide warnings for the same area, this is likely to be more common for alerts. As such, the extensions defined in [[I-D.forte-ecrit-lost-extensions](#)] (e.g., the ability to limit the number of returned mappings) are useful in this context.

4. Examples

Figure 1 shows a regular LoST query including geodetic location information with the Service URN pointing to 'urn:service:warning'.

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The semantic of the query is: "I am at location (point,"37.775 -122.422"). Please give me a URI where I can obtain information for warnings under the category 'urn:service:warning'.

```
<?xml version="1.0" encoding="UTF-8"?>
<findService
  xmlns="urn:ietf:params:xml:ns:lost1"
  xmlns:p2="http://www.opengis.net/gml"
  serviceBoundary="value"
  recursive="true">

  <location id="6020688f1ce1896d" profile="geodetic-2d">
    <p2:Point id="point1" srsName="urn:ogc:def:crs:EPSG::4326">
      <p2:pos>37.775 -122.422</p2:pos>
    </p2:Point>
  </location>
  <service>urn:service:warning</service>

</findService>
```

Figure 1: A <findService> geodetic query

In response to the query in Figure 1 the LoST server returns a regular LoST response, as shown in Figure 2. The returned mapping information indicates that the URIs (sip:alerts@example.com and xmpp:alerts@example.com) can be contacted to subscribe to warning events. The service boundary indicates that subsequent requests to the same service will lead to the same response for the geodetic

region indicated by the polygon in the <serviceBoundary> element.

```
<?xml version="1.0" encoding="UTF-8"?>
<findServiceResponse xmlns="urn:ietf:params:xml:ns:lost1"
  xmlns:p2="http://www.opengis.net/gml">
  <mapping
    expires="2007-01-01T01:44:33Z"
    lastUpdated="2006-11-01T01:00:00Z"
    source="authoritative.example"
    sourceId="7e3f40b098c711dbb6060800200c9a66">
    <displayName xml:lang="en">
      Austrian Early Warning Center
    </displayName>
    <service>urn:service:warning</service>
    <serviceBoundary profile="geodetic-2d">
      <p2:Polygon srsName="urn:ogc:def::crs:EPSG::4326">
        <p2:exterior>
          <p2:LinearRing>
            <p2:pos>37.775 -122.4194</p2:pos>
            <p2:pos>37.555 -122.4194</p2:pos>
            <p2:pos>37.555 -122.4264</p2:pos>
            <p2:pos>37.775 -122.4264</p2:pos>
            <p2:pos>37.775 -122.4194</p2:pos>
          </p2:LinearRing>
```

```

        </p2:exterior>
      </p2:Polygon>
    </serviceBoundary>
    <uri>sip:alerts@example.com</uri>
    <uri>xmpp:alerts@example.com</uri>
  </mapping>
  <path>
    <via source="resolver.example"/>
    <via source="authoritative.example"/>
  </path>
  <locationUsed id="6020688f1ce1896d"/>
</findServiceResponse>

```

Figure 2: A <findServiceResponse> geodetic answer

Figure 3 shows a <ListServicesByLocation> query asking for the services that are available at a given location; in this example at a point (-34.407 150.883).

```

<?xml version="1.0" encoding="UTF-8"?>
<listServicesByLocation
  xmlns="urn:ietf:params:xml:ns:lost1"
  xmlns:p2="http://www.opengis.net/gml"
  recursive="true">
  <location id="3e19dfb3b9828c3" profile="geodetic-2d">
    <p2:Point srsName="urn:ogc:def:crs:EPSG::4326">
      <p2:pos>-34.407 150.883</p2:pos>
    </p2:Point>
  </location>
  <service>urn:service:warning</service>
</listServicesByLocation>

```

Figure 3: Example of <ListServicesByLocation> query

Figure 4 lists a possible response to the <ListServicesByLocation> query with 6 subservices being offered for the indicated geographical region.

```
<?xml version="1.0" encoding="UTF-8"?>
<listServicesByLocationResponse
  xmlns="urn:ietf:params:xml:ns:lost1">
  <serviceList>
    urn:service:warning.geo
    urn:service:warning.met
    urn:service:warning.safety
    urn:service:warning.security
    urn:service:warning.rescue
    urn:service:warning.fire
  </serviceList>
  <path>
    <via source="resolver.example"/>
    <via source="authoritative.example"/>
  </path>
  <locationUsed id="3e19dfb3b9828c3"/>
</listServicesByLocationResponse>
```

Figure 4: Example of <listServicesByLocationResponse>

[5.](#) Security Considerations

The security considerations of [RFC 5031](#) [[RFC5031](#)], [RFC 5222](#) [[RFC5222](#)] and [[I-D.rosen-sipping-cap](#)] are relevant to this document. This document does not introduce new security vulnerabilities.

[6.](#) IANA Considerations

[6.1.](#) Sub-Services for the 'warning' Service

This section defines the service registration within the IANA registry defined in [Section 4.1 of \[RFC5031\]](#), using the top-level service label 'warning'.

The 'warning' service type describes services providing public safety alerts, i.e., alerts that can warn members of the public about dangers to life, health and property. Additional sub-services can be added after expert review and must be of general public interest and have a similar emergency nature. The expert is designated by the ECRIT working group, its successor, or, in their absence, the IESG. The expert review should only approve early warning based emergency services that are offered widely and in different countries, with approximately the same caller expectation in terms of services rendered. The 'warning' service is not meant to be used by non-emergency services related information.

The warning classification (including description) in the list below is taken from the CAP specification [[cap](#)]:

'urn:service:warning': The generic 'warning' service denotes a generic early warning message of any type encompassing all of the services listed below.

'urn:service:warning:geo': Geophysical (inc. landslide)

'urn:service:warning:met': Meteorological (inc. flood)

'urn:service:warning:safety': General emergency and public safety

'urn:service:warning:security': Law enforcement, military, homeland and local/private security

'urn:service:warning:rescue': Rescue and recovery

'urn:service:warning:fire': Fire suppression and rescue

'urn:service:warning:health': Medical and public health

'urn:service:warning:env': Pollution and other environmental

'urn:service:warning:transport': Public and private transportation

'urn:service:warning:infra': Utility, telecommunication, other non-transport infrastructure

'urn:service:warning:cbrne': Chemical, Biological, Radiological, Nuclear or High-Yield Explosive threat or attack

[6.2.](#) Initial IANA Registration

The following table contains the initial IANA registration for early warning services.

Service	Reference	Description
warning	RFC TBD	Early Warning Services
warning.geo	RFC TBD	Geophysical (inc. landslide)
warning.met	RFC TBD	Meteorological (inc. flood)
warning.safety	RFC TBD	General emergency and public safety
warning.security	RFC TBD	Law enforcement, military, homeland and local/private security
warning.rescue	RFC TBD	Rescue and recovery
warning.fire	RFC TBD	Fire suppression and rescue
warning.health	RFC TBD	Medical and public health
warning.env	RFC TBD	Pollution and other environmental
warning.transport	RFC TBD	Public and private transportation
warning.infra	RFC TBD	Utility, telecommunication, other non-transport infrastructure
warning.cbrne	RFC TBD	Chemical, Biological, Radiological, Nuclear or High-Yield Explosive threat or attack

[7.](#) Acknowledgments

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[8.1.](#) Normative References

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