XEP-0127: Common Alerting Protocol (CAP) Over XMPP

Peter Saint-Andre

mailto:stpeter@jabber.org

xmpp:stpeter@jabber.org

https://stpeter.im/

Boyd Fletcher

mailto:Boyd.Fletcher@je.jfcom.mil

xmpp:bfletcher@jabber.com

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This document specifies a method for sending Common Alerting Protocol (CAP) data over XMPP.

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Contents

1 Introduction

The Common Alerting Protocol [1] (CAP) is an open format for alerts and notifications, defined by OASIS [2]. CAP was developed to address the call, published in a (U.S.) National Science and Technology Council report, for "a standard method ... to collect and relay instantaneously and automatically all types of hazard warnings and reports". Given that the Extensible Messaging and Presence Protocol (see XMPP Core [3]) provides a near-real-time transport mechanism for structured information, and that CAP is defined as an XML data format, it makes sense to define a way to transport CAP information over XMPP. Such a method is defined herein.

2 Terminology

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [4].

3 Protocol

Because the alerts and notifications structured via CAP require a "push" medium, they SHOULD be sent via the XML <message/> stanza defined in XMPP Core. The message could be sent using either of the following methods:

1. Directly from the sender to a single recipient, a list of recipients (using Extended Stanza Addressing [5]), or a Multi-User Chat [6] room

2. Published to a list of subscribers via Publish-Subscribe [7]

Both methods are described below.

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[1] Common Alerting Protocol, v. 1.0 <http://www.oasis-open.org/committees/documents.php?wg_abbrev=emergency>.

[2] OASIS is a not-for-profit, international consortium that drives the development, convergence and adoption of e-business standards. For further information, see <http://www.oasis-open.org/>.

[3] RFC 3920: Extensible Messaging and Presence Protocol (XMPP): Core <http://tools.ietf.org/html/rfc3920>.

[4] RFC 2119: Key words for use in RFCs to Indicate Requirement Levels <http://tools.ietf.org/html/rfc2119>.

[5] XEP-0033: Extended Stanza Addressing <http://xmpp.org/extensions/xep-0033.html>.

[6] XEP-0045: Multi-User Chat <http://xmpp.org/extensions/xep-0045.html>.

[7] XEP-0060: Publish-Subscribe <http://xmpp.org/extensions/xep-0060.html>.

3.1 Direct Messages

In the case of direct messages, the message stanza SHOULD have no 'type' attribute, but MAY have any defined type that is appropriate to the communications context (e.g., "groupchat" in a text conference). The <alert/> element SHOULD be the only child element of the message stanza, but other elements MAY be included as necessary (e.g., a <body/> child in the 'jabber:client' namespace providing a natural-language description of the alert). The 'id' attribute of the <message/> stanza MAY be set to the value of the CAP <identifier/> element.

The following example shows Example A.2 from the CAP specification sent as a direct message.

Listing 1: An Alert Sent as a Message

```xml
<message from='KSTO@NWS.NOAA.GOV'
         to='weatherbot@jabber.org'
         id='KSTO1055887203'>
  <alert xmlns='http://www.incident.com/cap/1.0'>
    <identifier>KSTO1055887203</identifier>
    <sender>KSTO@NWS.NOAA.GOV</sender>
    <sent>2003-06-17T14:57:00-07:00</sent>
    <status>Actual</status>
    <msgType>Alert</msgType>
    <scope>Public</scope>
    <info>
      <category>Met</category>
      <event>SEVERE THUNDERSTORM</event>
      <urgency>Severe</urgency>
      <certainty>Likely</certainty>
      <eventCode>same=SVR</eventCode>
      <senderName>NATIONAL WEATHER SERVICE SACRAMENTO</senderName>
      <headline>SEVERE THUNDERSTORM WARNING</headline>
      <description>
        AT 254 PM PDT... NATIONAL WEATHER SERVICE DOPPLER RADAR
        INDICATED A SEVERE THUNDERSTORM OVER SOUTH CENTRAL ALPINE
        COUNTY... OR ABOUT 18 MILES SOUTHEAST OF KIRKWOOD...
        MOVING SOUTHWEST AT 5 MPH. HAIL... INTENSE RAIN AND STRONG
        DAMAGING WINDS ARE LIKELY WITH THIS STORM
      </description>
      <instruction>
        TAKE COVER IN A SUBSTANTIAL SHELTER UNTIL THE STORM PASSES
      </instruction>
      <contact>BARUFFALDI/JUSKIE</contact>
      <area>
        <areaDesc>
          EXTREME NORTH CENTRAL TUOLUMNE COUNTY IN CALIFORNIA,
          EXTREME NORTHEASTERN CALAVERAS COUNTY IN CALIFORNIA,
          SOUTHWESTERN ALPINE COUNTY IN CALIFORNIA
        </areaDesc>
        <polygon>
          38.47,-120.14 38.34,-119.95 38.52,-119.74
```

```
          38.62,-119.89 38.47,-120.14
        </polygon>
        <geocode>fips6=006109</geocode>
        <geocode>fips6=006109</geocode>
        <geocode>fips6=006103</geocode>
      </area>
    </info>
  </alert>
</message>
```

3.2 PubSub

The publish-subscribe protocol defined in XEP-0060 provides a way to send information to a number of subscribers, and to control the list of subscribers.

The following example shows Example A.2 from the CAP specification published to a pubsub node.

Listing 2: An Alert Published to a PubSub Node

```
<iq type='set'
    from='KSTO@NWS.NOAA.GOV'
    to='pubsub.jabber.org'
    id='someID'>
  <pubsub xmlns='http://jabber.org/protocol/pubsub'>
    <publish node='NOAA-ALERTS'>
      <item id='KSTO1055887203'>
        <alert xmlns='http://www.incident.com/cap/1.0'>
          <identifier>KSTO1055887203</identifier>
          <sender>KSTO@NWS.NOAA.GOV</sender>
          <sent>2003-06-17T14:57:00-07:00</sent>
          <status>Actual</status>
          <msgType>Alert</msgType>
          <scope>Public</scope>
          <info>
            <category>Met</category>
            <event>SEVERE THUNDERSTORM</event>
            <urgency>Severe</urgency>
            <certainty>Likely</certainty>
            <eventCode>same=SVR</eventCode>
            <senderName>NATIONAL WEATHER SERVICE SACRAMENTO</
                senderName>
            <headline>SEVERE THUNDERSTORM WARNING</headline>
            <description>
              AT 254 PM PDT... NATIONAL WEATHER SERVICE DOPPLER RADAR
              INDICATED A SEVERE THUNDERSTORM OVER SOUTH CENTRAL
                  ALPINE
              COUNTY... OR ABOUT 18 MILES SOUTHEAST OF KIRKWOOD...
```

```
                MOVING SOUTHWEST AT 5 MPH. HAIL... INTENSE RAIN AND
                    STRONG
                DAMAGING WINDS ARE LIKELY WITH THIS STORM
            </description>
            <instruction>
                TAKE COVER IN A SUBSTANTIAL SHELTER UNTIL THE STORM
                    PASSES
            </instruction>
            <contact>BARUFFALDI/JUSKIE</contact>
            <area>
                <areaDesc>
                    EXTREME NORTH CENTRAL TUOLUMNE COUNTY IN CALIFORNIA,
                    EXTREME NORTHEASTERN CALAVERAS COUNTY IN CALIFORNIA,
                    SOUTHWESTERN ALPINE COUNTY IN CALIFORNIA
                </areaDesc>
                <polygon>
                    38.47,-120.14 38.34,-119.95 38.52,-119.74
                    38.62,-119.89 38.47,-120.14
                </polygon>
                <geocode>fips6=006109</geocode>
                <geocode>fips6=006109</geocode>
                <geocode>fips6=006103</geocode>
            </area>
          </info>
        </alert>
      </item>
    </publish>
  </pubsub>
</iq>
```

If the pubsub node is configured to deliver payloads, the information is then sent to all subscribers.

Listing 3: An Alert Sent as a PubSub Payload

```
<message from='pubsub.jabber.org'
         to='weatherbot@jabber.org'>
  <event xmlns=path{}">
    <items node="NOAA-ALERTS">
      <alert xmlns='http://www.incident.com/cap/1.0'>
        <identifier>KSTO1055887203</identifier>
        <sender>KSTO@NWS.NOAA.GOV</sender>
        <sent>2003-06-17T14:57:00-07:00</sent>
        <status>Actual</status>
        <msgType>Alert</msgType>
        <scope>Public</scope>
        <info>
          <category>Met</category>
          <event>SEVERE THUNDERSTORM</event>
```

```
            <urgency>Severe</urgency>
            <certainty>Likely</certainty>
            <eventCode>same=SVR</eventCode>
            <senderName>NATIONAL WEATHER SERVICE SACRAMENTO</senderName>
            <headline>SEVERE THUNDERSTORM WARNING</headline>
            <description>
              AT 254 PM PDT... NATIONAL WEATHER SERVICE DOPPLER RADAR
              INDICATED A SEVERE THUNDERSTORM OVER SOUTH CENTRAL ALPINE
              COUNTY... OR ABOUT 18 MILES SOUTHEAST OF KIRKWOOD...
              MOVING SOUTHWEST AT 5 MPH. HAIL... INTENSE RAIN AND STRONG
              DAMAGING WINDS ARE LIKELY WITH THIS STORM
            </description>
            <instruction>
              TAKE COVER IN A SUBSTANTIAL SHELTER UNTIL THE STORM PASSES
            </instruction>
            <contact>BARUFFALDI/JUSKIE</contact>
            <area>
              <areaDesc>
                EXTREME NORTH CENTRAL TUOLUMNE COUNTY IN CALIFORNIA,
                EXTREME NORTHEASTERN CALAVERAS COUNTY IN CALIFORNIA,
                SOUTHWESTERN ALPINE COUNTY IN CALIFORNIA
              </areaDesc>
              <polygon>
                38.47,-120.14 38.34,-119.95 38.52,-119.74
                38.62,-119.89 38.47,-120.14
              </polygon>
              <geocode>fips6=006109</geocode>
              <geocode>fips6=006109</geocode>
              <geocode>fips6=006103</geocode>
            </area>
          </info>
        </alert>
      </items>
    </event>
</message>
.
.
.
```

4 Security Considerations

Security considerations for CAP are defined in Common Alerting Protocol, v. 1.0; security considerations for XMPP are defined in RFC 3920: XMPP Core; security considerations for the XMPP publish-subscribe extension are defined in XEP-0060: Publish Subscribe.

Furthermore, it may be appropriate to include the "Classification", "Distribute", and/or "Store" headers specified in Stanza Headers and Internet Metadata [8] in order to safeguard

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[8]XEP-0131: Stanza Headers and Internet Metadata <http://xmpp.org/extensions/xep-0131.html>.

CAP data.

5 IANA Considerations

This document requires no interaction with the Internet Assigned Numbers Authority (IANA) [9].

6 XMPP Registrar Considerations

No namespaces or parameters need to be registered with the XMPP Registrar [10] as a result of this document.

7 XML Schema

The CAP information format is defined by an XML schema. The reader is referred to the CAP specification for the relevant schema definition.

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[9]The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols, such as port numbers and URI schemes. For further information, see <http://www.iana.org/>.

[10]The XMPP Registrar maintains a list of reserved protocol namespaces as well as registries of parameters used in the context of XMPP extension protocols approved by the XMPP Standards Foundation. For further information, see <http://xmpp.org/registrar/>.