



XMPP

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

Peter Saint-Andre
<mailto:xsf@stpeter.im>
<xmpp:peter@jabber.org>
<http://stpeter.im/>

Boyd Fletcher
<mailto:Boyd.Fletcher@je.jfcom.mil>
<xmpp:bfletcher@jabber.com>

2004-12-09
Version 1.0

Status	Type	Short Name
Active	Informational	None

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

Legal

Copyright

This XMPP Extension Protocol is copyright © 1999 – 2018 by the [XMPP Standards Foundation](#) (XSF).

Permissions

Permission is hereby granted, free of charge, to any person obtaining a copy of this specification (the "Specification"), to make use of the Specification without restriction, including without limitation the rights to implement the Specification in a software program, deploy the Specification in a network service, and copy, modify, merge, publish, translate, distribute, sublicense, or sell copies of the Specification, and to permit persons to whom the Specification is furnished to do so, subject to the condition that the foregoing copyright notice and this permission notice shall be included in all copies or substantial portions of the Specification. Unless separate permission is granted, modified works that are redistributed shall not contain misleading information regarding the authors, title, number, or publisher of the Specification, and shall not claim endorsement of the modified works by the authors, any organization or project to which the authors belong, or the XMPP Standards Foundation.

Warranty

NOTE WELL: This Specification is provided on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE.

Liability

In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall the XMPP Standards Foundation or any author of this Specification be liable for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising from, out of, or in connection with the Specification or the implementation, deployment, or other use of the Specification (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if the XMPP Standards Foundation or such author has been advised of the possibility of such damages.

Conformance

This XMPP Extension Protocol has been contributed in full conformance with the XSF's Intellectual Property Rights Policy (a copy of which can be found at <https://xmpp.org/about/xsf/ipr-policy>) or obtained by writing to XMPP Standards Foundation, P.O. Box 787, Parker, CO 80134 USA).

Contents

1	Introduction	1
2	Terminology	1
3	Protocol	1
3.1	Direct Messages	1
3.2	PubSub	3
4	Security Considerations	5
5	IANA Considerations	6
6	XMPP Registrar Considerations	6
7	XML Schema	6

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 \(XEP-0033\)](#)⁵), or a [Multi-User Chat \(XEP-0045\)](#)⁶ room
2. Published to a list of subscribers via [Publish-Subscribe \(XEP-0060\)](#)⁷

Both methods are described below.

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")

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

²OASIS 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/>>.

³RFC 6120: Extensible Messaging and Presence Protocol (XMPP): Core <<http://tools.ietf.org/html/rfc6120>>.

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

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

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

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

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

```
<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>
      </area>
    </info>
  </alert>
</message>
```

```

    <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='KST01055887203'>
        <alert xmlns='http://www.incident.com/cap/1.0'>
          <identifier>KST01055887203</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>
          </info>
        </alert>
      </item>
    </publish>
  </pubsub>
</iq>

```

```

        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="http://jabber.org/protocol/pubsub#event">
    <items node="NOAA-ALERTS">
      <alert xmlns='http://www.incident.com/cap/1.0'>
        <identifier>KST01055887203</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>
        </info>
      </alert>
    </items>
  </event>
</message>

```

```

<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 \(XEP-0131\)](#)⁸ in order to safeguard CAP data.

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

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.

⁹The 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/>.

¹⁰The 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 <https://xmpp.org/registrar/>.