



XMPP

XEP-0152: Reachability Addresses

Joe Hildebrand
<mailto:jhildebr@cisco.com>
<xmpp:hildjj@jabber.org>

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

2008-10-06
Version 0.3

Status	Type	Short Name
Deferred	Standards Track	reach

This document defines an XMPP protocol extension for communicating reachability information related to non-XMPP devices.

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1 Introduction

Sometimes it is desirable or necessary to switch from instant messaging (IM) to another real-time communications medium, such as a telephone conversation conducted over the traditional public switched telephone network (PSTN) or more recent Voice over Internet Protocol (VoIP) applications. In order to facilitate switching from IM to telephony or some other medium, a user needs to advertise the address(es) at which they can be reached. There are several possible ways to do this:

- Publish the reachability address(es) in the user's vCard (see [vcard-temp](#)¹); this is convenient, but is not very dynamic (e.g., reachability addresses might change when the user moves to a new conference room in an office building).
- Send the reachability address(es) within a <presence/> stanza; this option is described in the [Presence Broadcast](#) section of this document and is consistent with [RFC 6121](#)² since reachability is one aspect of a user's availability for communication.
- Send reachability address(es) to the appropriate [Personal Eventing Protocol](#)³ node; this option is described in the [PEP Transport](#) section of this document but may not be available at all service providers.

2 Requirements

This document addresses the following requirements:

- Enable clients to dynamically publish reachability addresses.
- Minimize network traffic.

3 Data Format

The following is an example of the basic data format for reachability addresses:

Listing 1: Basic Data Format for Reachability Addresses

```
<reach xmlns='urn:xmpp:reach:0' >
```

¹XEP-0054: vcard-temp <<http://xmpp.org/extensions/xep-0054.html>>.

²RFC 6121: Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence <<http://tools.ietf.org/html/rfc6121>>.

³XEP-0163: Personal Eventing Protocol <<http://xmpp.org/extensions/xep-0163.html>>.

```
<addr uri='tel:+1-303-555-1212' />
<addr uri='sip:romeo@sipspeare.lit' />
</reach>
```

When publishing reachability addresses, the <reach/> element MUST contain at least one <addr/> element. Each <addr/> element MUST possess a 'uri' attribute, whose value MUST be the Uniform Resource Identifier (RFC 3986 ⁴) or Internationalized Resource Identifier (RFC 3987 ⁵) of an alternate communications method for reaching the user.

The <addr/> element MAY contain one or more <desc/> children whose XML character data is a natural-language description of the address; this element SHOULD possess an 'xml:lang' attribute whose value is a language tag that conforms to RFC 4646 ⁶ (although the default language MAY be specified at the stanza level; see RFC 6120 ⁷). In order to preserve bandwidth, the <desc/> element SHOULD NOT be included when sending reachability data via presence broadcast, but MAY be included when using the personal eventing protocol.

Listing 2: Reachability Addresses With Descriptions

```
<reach xmlns='urn:xmpp:reach:0'>
  <addr uri='tel:+1-303-555-1212'>
    <desc xml:lang='en'>New conference room number</desc>
  </addr>
  <addr uri='sip:romeo@sipspeare.lit'>
    <desc xml:lang='en'>My softphone</desc>
  </addr>
</reach>
```

4 Data Transport

As described below, this document specifies two methods of advertising reachability addresses:

- Presence broadcast
- Personal eventing via publish-subscribe (PEP)

This document does not recommend one transport method over the other.

In addition, a contact MAY request a user's reachability addresses using an <iq/> request-response sequence.

⁴RFC 3986: Uniform Resource Identifiers (URI): Generic Syntax <<http://tools.ietf.org/html/rfc3986>>.

⁵RFC 3987: Internationalized Resource Identifiers (IRIs) <<http://tools.ietf.org/html/rfc3987>>.

⁶RFC 4646: Tags for Identifying Languages <<http://tools.ietf.org/html/rfc4646>>.

⁷RFC 6120: Extensible Messaging and Presence Protocol (XMPP): Core <<http://tools.ietf.org/html/rfc6120>>.

4.1 Presence Broadcast

In order to broadcast reachability addresses in presence information, a user's client includes the <reach/> element in the <presence/> stanza it sends to its server:

Listing 3: User's Client Includes Reachability Addresses in Presence Broadcast

```
<presence from='romeo@montague.net'>
  <reach xmlns='urn:xmpp:reach:0'>
    <addr uri='tel:+1-303-555-1212' />
    <addr uri='sip:romeo@sipspeare.lit' />
  </reach>
</presence>
```

The user's server then broadcasts that presence stanza to all entities who are subscribed to the user's presence:

Listing 4: User's Server Broadcasts Presence Information

```
<presence from='romeo@montague.net' to='juliet@capulet.com'>
  <reach xmlns='urn:xmpp:reach:0'>
    <addr uri='tel:+1-303-555-1212' />
    <addr uri='sip:romeo@sipspeare.lit' />
  </reach>
</presence>
```

4.2 Personal Eventing Protocol

In order to publish reachability addresses via the personal eventing protocol (XEP-0163), the entity simply publishes data to the "urn:xmpp:reach:0" node.

Listing 5: Entity publishes reachability addresses

```
<iq type='set'
  from='romeo@montague.net'
  to='pubsub.shakespeare.lit'
  id='publish1'>
  <pubsub xmlns='http://jabber.org/protocol/pubsub'>
    <publish node='urn:xmpp:reach:0'>
      <item id='a1s2d3f4g5h6bjeh936'>
        <reach xmlns='urn:xmpp:reach:0'>
          <addr uri='tel:+1-303-555-1212'>
            <desc xml:lang='en'>My mobile number</desc>
          </addr>
          <addr uri='sip:romeo@sipspeare.lit'>
            <desc xml:lang='en'>My softphone</desc>
          </addr>
        </reach>
      </item>
    </publish>
  </pubsub>
</iq>
```

```

    </reach>
  </item>
</publish>
</pubsub>
</iq>

```

Listing 6: Subscriber receives event with payload

```

<message from='pubsub.shakespeare.lit'
  to='juliet@capulet.com'>
  <event xmlns='http://jabber.org/protocol/pubsub#event'>
    <items node='urn:xmpp:reach:0'>
      <item id='a1s2d3f4g5h6bjeh936'>
        <reach xmlns='urn:xmpp:reach:0'>
          <addr uri='tel:+1-303-555-1212'>
            <desc xml:lang='en'>My mobile number</desc>
          </addr>
          <addr uri='sip:romeo@sipspeare.lit'>
            <desc xml:lang='en'>My softphone</desc>
          </addr>
        </reach>
      </item>
    </items>
  </event>
</message>

```

5 Determining Support

If an entity supports reachability addresses, it MUST advertise that fact by returning a feature of "urn:xmpp:reach:0" (see [Namespace Versioning](#) regarding the possibility of incrementing the version number) in response to a [Service Discovery](#)⁸ information request. The response MUST also include features for the application formats and transport methods supported by the responding entity, as described in the relevant specifications.

Listing 7: Service Discovery Information Request

```

<iq from='juliet@capulet.com/balcony'
  id='disco1'
  to='romeo@montague.net/orchard'
  type='get'>
  <query xmlns='http://jabber.org/protocol/disco#info' />
</iq>

```

Listing 8: Service Discovery Information Response

⁸XEP-0030: Service Discovery <<http://xmpp.org/extensions/xep-0030.html>>.

```
<iq from='romeo@montague.net/orchard'  
  id='disco1'  
  to='juliet@capulet.com/balcony'  
  type='result'>  
  <query xmlns='http://jabber.org/protocol/disco#info'>  
    <feature var='urn:xmpp:reach:0' />  
  </query>  
</iq>
```

In order for an application to determine whether an entity supports this protocol, where possible it SHOULD use the dynamic, presence-based profile of service discovery defined in [Entity Capabilities](#)⁹. However, if an application has not received entity capabilities information from an entity, it SHOULD use explicit service discovery instead.

6 Implementation Notes

To preserve network bandwidth, the sender SHOULD NOT include the `<desc/>` element unless that information is deemed necessary to enable communication.

A recipient SHOULD attempt communications with reachability addresses in the order that the `<addr/>` elements appear within the `<reach/>` element.

7 Internationalization Considerations

If included, the `<desc/>` element SHOULD possess an `'xml:lang'` attribute specifying the language of the human-readable descriptive text for a particular address.

8 Security Considerations

This document introduces no security considerations above and beyond those described in RFC 6120, RFC 6121, and (for the personal eventing transport) XEP-0163.

9 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)¹⁰.

⁹XEP-0115: Entity Capabilities <http://xmpp.org/extensions/xep-0115.html>.

¹⁰The 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 XMPP Registrar Considerations

10.1 Protocol Namespaces

This specification defines the following XML namespace:

- urn:xmpp:reach:0

Upon advancement of this specification from a status of Experimental to a status of Draft, the [XMPP Registrar](#)¹¹ shall add the foregoing namespace to the registry located at <http://xmpp.org/registrar/namespaces.html>, as described in Section 4 of [XMPP Registrar Function](#)¹².

10.2 Namespace Versioning

If the protocol defined in this specification undergoes a revision that is not fully backwards-compatible with an older version, the XMPP Registrar shall increment the protocol version number found at the end of the XML namespaces defined herein, as described in Section 4 of XEP-0053.

11 XML Schema

```
<?xml version='1.0' encoding='UTF-8'?>
<xs:schema
  xmlns:xs='http://www.w3.org/2001/XMLSchema'
  targetNamespace='urn:xmpp:reach:0'
  xmlns='urn:xmpp:reach:0'
  elementFormDefault='qualified'>
  <xs:element name='reach'>
    <xs:complexType>
      <xs:sequence>
        <xs:element name='addr'
          minOccurs='0'
          maxOccurs='unbounded'
          type='addrElementType' />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
```

¹¹The 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/>.

¹²XEP-0053: XMPP Registrar Function <http://xmpp.org/extensions/xep-0053.html>.

```
        </xs:sequence>
    </xs:complexType>
</xs:element>

<xs:complexType name='addrElementType'>
    <xs:sequence>
        <xs:element name='desc'
            minOccurs='0'
            maxOccurs='unbounded'
            type='xs:string' />
    </xs:sequence>
    <xs:attribute name='uri' use='required' type='xs:anyURI' />
</xs:complexType>

</xs:schema>
```