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**is-composing Indication for Instant Messaging Using the Session  
Initiation Protocol (SIP)**

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Abstract

In instant messaging systems, it is useful to know that the other party is composing a message, e.g., typing. This document defines a new content type and XML namespace that conveys information about a message being composed. The message could be of any type, including text, voice or video.

## **1 Introduction**

By definition, instant messaging is message-based, i.e., a user composes a message by typing, speaking or recording a video clip. This message is then sent. Unlike email, instant messaging is often conversational, so that the other party is waiting for a response. If no response is forthcoming, an IM participant side may erroneously assume that either the communication partner has left or that it is her turn to type again, leading to messaging "crossing on the wire". A number of commercial instant messaging systems feature an "is typing" indication that is set as soon as one party starts typing a message. In this document, we describe a generalized version of this indication. It applies to the composition of any media type, not just text. For example, it might be used if somebody is recording an audio or video clip.

This indication can be considered somewhat analogous to the comfort noise packets that are transmitted in silence-suppressed interactive voice conversations.

The mechanism described here aims to satisfy the requirements in [\[3\]](#).

## **2 Terminology and Conventions**

This memo makes use of the vocabulary defined in the IMPP Model document [\[1\]](#). Terms such as CLOSED, INSTANT MESSAGE, OPEN, PRESENCE SERVICE, PRESENTITY, WATCHER, and WATCHER USER AGENT in the memo are used in the same meaning as defined therein. The key words MUST, MUSTNOT, REQUIRED, SHOULD, SHOULDNOT, RECOMMENDED, MAY, and OPTIONAL in this document are to be interpreted as described in BCP XX, [RFC 2119](#) [\[2\]](#).

## **3 Description**

There are two modes of operation, a keep-alive and two-state mode. In keep-alive mode, an IM terminal where the user is actively composing a message sends an update every few seconds if there has been activity such as typing. The messages cease if there is no sign of activity during the last interval. This mode has the advantage that the rate of is-composing indications is constant, but it adds unnecessary overhead for the common case that a message is composed in one uninterrupted activity. The keep-alive mode would be useful if the is-composing indication can convey additional information, such as the amount of content that has been produced. Such fine-grained information seems of little practical use, however.

We choose a two-state mode with the states "idle" and "active". As long as the user produces message content, the state remains active.



If the user stops composing for more than a configured time interval, the idle threshold, the state transitions to idle. If a message is sent before the idle threshold expires, no idle state indication is needed. Thus, in most cases, only one message is needed. The message rate is limited to one message per idle threshold interval.

The <contenttype> can contain either just a MIME media type or a media type and subtype.

The idle threshold SHOULD be ten seconds.

The XML schema can be extended in the future.

We chose XML since this also makes it possible to easily turn this into event notification. This is likely only useful for third-party notifications, i.e., notifying event recipients other than the recipient of the MESSAGE.

Events were also considered, but have a number of disadvantages. They add more overhead, since an explicit and periodic subscription is required. For page-mode delivery, subscribing to the right user agent and set of messages may not be easy. An in-band, message-based mechanism is also easier to gateway into non-SIP systems.

#### **4 Using the Indicator**

The is-composing indicator can be used with either SIP page mode or session mode, although it is a more natural fit with session mode. In session mode, the indicator is sent as part of the messaging stream. Its usage is negotiated just like support for any other media type in a stream is negotiated, i.e., through SDP. Sending the indicators within the messaging stream has many benefits. First, it ensures proper sequencing and synchronization with the actual messages being composed. Secondly, end-to-end security can be applied to the messages. Thirdly, SDP negotiation mechanisms can be used to turn it on and off at any time, and even negotiate its use in a single direction at a time.

Usage with the page mode is also straightforward. The indicator would be carried as the body of a page mode message. Unfortunately, there is no way to negotiate its usage, turn it on or off, or even be sure that the indicator gets delivered before the actual content being composed.

#### **5 Example**



```
<?xml version="1.0" encoding="UTF-8"?>
  <isComposing xmlns="urn:ietf:params:xml:ns:sip-iscomposing"
    <state>active</active>
    <contenttype>text/plain</contenttype>
    <lastactivity>2003-01-27T10:43:00Z</lastactivity>
  </isComposing>
```

```
<?xml version="1.0" encoding="UTF-8"?>
  <isComposing xmlns="urn:ietf:params:xml:ns:sip-iscomposing"
    <state>idle</active>
    <contenttype>audio</contenttype>
    <lastactivity>2003-01-27T10:43:00Z</lastactivity>
  </isComposing>
```

## 6 XML Schema Definitions

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema targetNamespace="urn:ietf:params:xml:ns:sip-iscomposing"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:tns="urn:ietf:params:xml:ns:sip-iscomposing"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

  <!-- This import brings in the XML language attribute xml:lang-->
  <xs:import namespace="http://www.w3.org/XML/1998/namespace"
    schemaLocation="http://www.w3.org/2001/xml.xsd"/>

  <xs:element name="isComposing">
    <xs:sequence>
      <xs:element name="status" type="tns:status"
        minOccurs="1"/>
      <xs:element name="lastactive" type="xs:dateTime"
        minOccurs="0"/>
      <xs:element name="contenttype" type="xs:string" minOccurs="0"
        maxOccurs="1"/>
      <xs:any namespace="##other" processContents="lax" minOccurs="0"
        maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:element>

  <xs:simpleType name="status">
    <xs:restriction base="xs:string">
```



```
<xs:enumeration value="active"/>
<xs:enumeration value="idle"/>
</xs:restriction>
</xs:simpleType>
</xs:schema>
```

## **7 Security Considerations**

The is-composing indication provides a fine-grained view of the activity of the entity composing and thus deserves particularly careful confidentiality protection so that only the intended destination of the message will receive the is-composing indication.

## **8 IANA Considerations**

### **8.1 Content-Type Registration for**

To: [ietf-types@iana.org](mailto:ietf-types@iana.org)

Subject: Registration of MIME media type application/sip-iscomposing+xml

MIME media type name: application

MIME subtype name: sip-iscomposing+xml

Required parameters: (none)

Optional parameters: charset; Indicates the character encoding of enclosed XML. Default is UTF-8.

Encoding considerations: Uses XML, which can employ 8-bit characters, depending on the character encoding used. See [RFC 3023 \[RFC 3023\], section 3.2](#).

Security considerations: This content type is designed to carry information about current user activity, which may be considered private information. Appropriate precautions should be adopted to limit disclosure of this information.

Interoperability considerations: This content type provides a common format for exchange of composition activity information.

Published specification: RFCXXXX (this document)





Applications which use this media type: Instant messaging systems.

Additional information: none

Person & email address to contact for further information:  
Henning Schulzrinne  
E-mail: hgs@cs.columbia.edu

Intended usage: LIMITED USE

Author/Change controller: This specification is a work item of the IETF SIMPLE working group, with mailing list address <simple@ietf.org>.

Other information: This media type is a specialization of application/xml [[RFC 3023](#)], and many of the considerations described there also apply to application/sip-iscomposing+xml.

## **[8.2](#) URN Sub-Namespace Registration for**

URI: urn:ietf:params:xml:ns:sip-iscomposing

Description: This is the XML namespace for XML elements defined by RFCXXXX to describe composition activity by SIP-based instant message client using the

application/sip-iscomposing+xml

content type.

Registrant Contact: IETF, SIMPLE working group,  
<simple@ietf.org>,  
Henning Schulzrinne, <hgs@cs.columbia.edu>

XML:

BEGIN

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML Basic 1.0//EN"
"http://www.w3.org/TR/xhtml-basic/xhtml-basic10.dtd">
<html xmlns="http://www.w3.org/1999/xhtml
<head>
  <meta http-equiv="content-type"
  content="text/html; charset=iso-8859-1"/>
  <title>Is-composing Indication for Instant Messaging Using
  Session Initiation Protocol (SIP)</title>
```

the



```
</head>
<body>
  <h1>Namespace for SIMPLE iscomposing extension</h1>
  <h2>application/sip-iscomposing+xml</h2>
  <p>See <a href="[[[URL of published RFC]]]">RFCXXXX</a>.</p>
</body>
</html>
END
```

## **9 Acknowledgements**

Jonathan Rosenberg and Xiaotao Wu provided helpful comments.

## **10 References**

### **11 Normative References**

[1] M. Day, J. Rosenberg, and H. Sugano, "A model for presence and instant messaging," [RFC 2778](#), Internet Engineering Task Force, Feb. 2000.

[2] S. Bradner, "Key words for use in rfc's to indicate requirement levels," [RFC 2119](#), Internet Engineering Task Force, Mar. 1997.

### **12 Informative References**

[3] J. Rosenberg, "Advanced instant messaging requirements for the session initiation protocol (SIP)," internet draft, Internet Engineering Task Force, Dec. 2002. Work in progress.

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