



# XMPP

## XEP-0073: Basic IM Protocol Suite

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This document defines a recommended suite of Jabber/XMPP protocols to be supported by basic instant messaging and presence applications. Note: This protocol suite has been obsoleted by XEP-0211 and XEP-0212.

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## 1 Introduction

*Note: This protocol suite is obsolete. For updated protocol suites, refer to [XMPP Basic Client 2008 \(XEP-0211\)](#)<sup>1</sup> and [XMPP Basic Server 2008 \(XEP-0212\)](#)<sup>2</sup>.*

Given the large number of Jabber/XMPP protocols,<sup>3</sup> it is not always clear to developers exactly which protocols they need to implement in order to interoperate over Jabber/XMPP networks. This document attempts to assist developers by defining a protocol suite for basic instant messaging and presence.

## 2 Requirements and Approach

Defining a protocol suite provides a high-level "bucket" into which we can place specific functionality areas for development and compliance testing. A baseline is provided by RFCs 3920 and 3921, which define XML streams, JID processing, channel encryption, authentication, the three primary XML stanza types (<message/>, <presence/>, and <iq/>), namespace handling, presence subscriptions, roster management, and privacy lists (permit/deny lists). However, basic Jabber instant messaging and presence applications should support several additional protocols that were not included in the XMPP specifications for either of the following reasons:

- They were not required to meet the requirements of [RFC 2779](#)<sup>12</sup> (e.g, service discovery)
- They were and remain in common use within the Jabber community but did not meet the more stringent requirements of the IETF (e.g., old-style, non-SASL authentication)

The Basic IM Protocol Suite does not include more advanced IM functionality, such as groupchat or HTML message formatting; see [Intermediate IM Protocol Suite \(XEP-0117\)](#)<sup>13</sup> for such features.

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<sup>1</sup>XEP-0211: XMPP Basic Client 2008 <<https://xmpp.org/extensions/xep-0211.html>>.

<sup>2</sup>XEP-0212: XMPP Basic Server 2008 <<https://xmpp.org/extensions/xep-0212.html>>.

<sup>3</sup>The protocols developed by the Jabber community have matured considerably since 1999. The core protocols were originally created by a small group of developers who worked on early Jabber-related open-source software projects such as the [jabberd](#)<sup>4</sup> server, the Winjab, Gabber, and Jarl clients, the Net::Jabber and Jabberbeans libraries, and gateways to consumer IM services. In the summer of 2001, the [XMPP Standards Foundation \(XSF\)](#)<sup>5</sup> was founded to institute a formal standards process within the growing Jabber community (codified in [XMPP Extension Protocols \(XEP-0001\)](#)<sup>6</sup>). In late 2002, the [Internet Engineering Task Force \(IETF\)](#)<sup>7</sup> formed the [XMPP Working Group](#)<sup>8</sup>, which formalized the core Jabber protocols under the name Extensible Messaging and Presence Protocol (XMPP). In early 2004, the IETF approved the main XMPP specifications as Proposed Standards within the Internet Standards Process defined by [RFC 2026](#)<sup>9</sup>, resulting in publication of [RFC 3920](#)<sup>10</sup> and [RFC 3921](#)<sup>11</sup>. In the meantime, the XSF has continued to develop additional protocols on top of XMPP in order to address functionality areas that are too application-specific for consideration within the IETF.

<sup>12</sup>RFC 2779: A Model for Presence and Instant Messaging <<http://tools.ietf.org/html/rfc2779>>.

<sup>13</sup>XEP-0117: Intermediate IM Protocol Suite <<https://xmpp.org/extensions/xep-0117.html>>.

### 3 Definition

The software developed in the Jabber community is built on the foundation of XML streams, a consistent addressing scheme (JIDs), channel encryption, authentication of an entity (client or server) with a server, three core data elements (<message/>, <presence/>, and <iq/>), and proper handling of XML namespaces. These foundational building blocks have been formalized within RFC 3920, support for which is REQUIRED by this protocol suite.

However, XMPP Core is not fully congruent with the core of what has traditionally been known as "Jabber", and this divergence needs to be captured in the Basic IM Protocol Suite. For the sake of backward compatibility, support for [Non-SASL Authentication \(XEP-0078\)](#)<sup>14</sup> is RECOMMENDED for servers (but not clients) as a fallback method of authentication by older deployed clients.<sup>15</sup> In addition, support for the error 'code' attribute specified in [Error Condition Mappings \(XEP-0086\)](#)<sup>16</sup> is RECOMMENDED for both clients and servers.

RFC 3920 does not define everything that is normally expected of even a minimal instant messaging and presence application (in effect, it defines the transport layer rather than the IM and presence application layer). Much of this IM and presence functionality is defined in RFC 3921 in order to meet the requirements of RFC 2779. In particular, RFC 3921 defines roster management, presence subscriptions, and routing and delivery guidelines for clients and servers. Therefore, support for RFC 3921 is REQUIRED.

Furthermore, Jabber instant messaging and presence applications typically include the ability to discover information about other entities on the network, and to reply to queries for information. This behavior is extremely helpful because it ensures that entities on the network can determine each other's capabilities and thus understand how to communicate together. Therefore, support for [Service Discovery \(XEP-0030\)](#)<sup>17</sup> is REQUIRED by this protocol suite, as is (for clients) the dynamic profile of service discovery specified in [Entity Capabilities \(XEP-0115\)](#)<sup>18</sup>.

Traditionally, Jabber servers (and some services) have also offered the ability for clients to register accounts "in-band" (see [In-Band Registration \(XEP-0077\)](#)<sup>19</sup>) in order to bootstrap participation on the network; support for that protocol is RECOMMENDED but any given server deployment MAY disable in-band registration as a matter of service provisioning.

Thus we define the Basic IM Protocol Suite as follows:

| Specification       | Requirement Level |
|---------------------|-------------------|
| RFC 3920: XMPP Core | REQUIRED          |
| RFC 3921: XMPP IM   | REQUIRED          |

<sup>14</sup>XEP-0078: Non-SASL Authentication <<https://xmpp.org/extensions/xep-0078.html>>.

<sup>15</sup>Older software also used port 5223 for SSL-enabled communications between a client and a server, rather than upgrading port 5222 as is done during TLS negotiation (the equivalent for server-to-server communications was never implemented). Support for this behavior is OPTIONAL on the part of servers for backwards-compatibility with older deployed clients.

<sup>16</sup>XEP-0086: Error Condition Mappings <<https://xmpp.org/extensions/xep-0086.html>>.

<sup>17</sup>XEP-0030: Service Discovery <<https://xmpp.org/extensions/xep-0030.html>>.

<sup>18</sup>XEP-0115: Entity Capabilities <<https://xmpp.org/extensions/xep-0115.html>>.

<sup>19</sup>XEP-0077: In-Band Registration <<https://xmpp.org/extensions/xep-0077.html>>.

| Specification                      | Requirement Level                                    |
|------------------------------------|--|
| XEP-0030: Service Discovery        | REQUIRED   |
| XEP-0077: In-Band Registration     | RECOMMENDED  |
| XEP-0078: Non-SASL Authentication  | RECOMMENDED for servers; NOT RECOMMENDED for clients |
| XEP-0086: Error Condition Mappings | RECOMMENDED  |
| XEP-0115: Entity Capabilities      | REQUIRED for clients                                 |

## 4 Security Considerations

RFC 3920 requires support for SASL and TLS as must-implement protocols, and that support is not modified herein. The older authentication method specified in XEP-0078: Non-SASL Authentication is now deprecated; however, support for it is still recommended in server implementations for the sake of backward compatibility (see XEP-0078 regarding the proper order of precedence between SASL authentication and non-SASL authentication).

## 5 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#) <sup>20</sup>.

## 6 XMPP Registrar Considerations

This document requires no interaction with the [XMPP Registrar](#) <sup>21</sup>.

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<sup>20</sup>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/>.

<sup>21</sup>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 <https://xmpp.org/registrar/>.