



XMPP

XEP-0459: XMPP Compliance Suites 2022

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This document defines XMPP application categories for different use cases (Core, Web, IM, and Mobile), and specifies the required XEPs that client and server software needs to implement for compliance with the use cases.

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1 Introduction

There is a growing number of XMPP Extension Protocols (XEPs) that provide different building blocks for XMPP-based applications. XMPP software developers are confronted with the challenge of finding the right combination of XEPs for a given application profile. Users need a way to compare applications without resorting to comparing for individual XEP numbers.

This document defines XMPP application **Categories** based on typical use cases (Core, Web, IM, Mobile) and **Levels** (Core, Advanced) based on functionality in the respective category. For each combination of those, the required XEPs are referenced. As the protocol landscape changes over time, this document is updated roughly once a year.

For developers, this document provides guidance on which specifications they need to consider when implementing an application of a certain kind. By completing a compliance test or performing a self-assessment, they can advertise their implementation as compliant with a given Category and Level.

For users, this provides an easy way to compare implementations based on their respective advertised compliance levels and year.

Unless explicitly noted, support for the listed specifications is REQUIRED for compliance purposes. A feature is considered supported if all comma separated feature providers listed in the "Providers" column are implemented (unless otherwise noted).

1.1 Changes since 2021

The following changes were made to the Compliance Suites since [XMPP Compliance Suites 2021 \(XEP-0443\)](#)¹:

- Renamed "Core Client" and "Core Server" to "Client" and "Server"
- Web category:
 - Client: required Connection Mechanism Discovery.
- IM category:
 - Advanced Group Chat: replaced [Bookmarks Conversion \(XEP-0411\)](#)² with [PEP Native Bookmarks \(XEP-0402\)](#)³ conversion

1.2 Changes since 2020

The following changes were made to the Compliance Suites since [XMPP Compliance Suites 2020 \(XEP-0423\)](#)⁴:

¹XEP-0443: XMPP Compliance Suites 2021 <<https://xmpp.org/extensions/xep-0443.html>>.

²XEP-0411: Bookmarks Conversion <<https://xmpp.org/extensions/xep-0411.html>>.

³XEP-0402: PEP Native Bookmarks <<https://xmpp.org/extensions/xep-0402.html>>.

⁴XEP-0423: XMPP Compliance Suites 2020 <<https://xmpp.org/extensions/xep-0423.html>>.

- Introduced new category for [A/V Calling](#).
- IM Category:
 - Specifications of note: added [Message Styling \(XEP-0393\)](#) ⁵, [Extended Channel Search \(XEP-0433\)](#) ⁶, [Message Retraction \(XEP-0424\)](#) ⁷, and [Message Moderation \(XEP-0425\)](#) ⁸

1.3 Changes since 2019

The following changes were made to the Compliance Suites since [XMPP Compliance Suites 2019 \(XEP-0412\)](#) ⁹:

- IM Category:
 - Client: added [The /me Command \(XEP-0245\)](#) ¹⁰
 - Client and Server: added [HTTP File Upload \(XEP-0363\)](#) ¹¹
 - Advanced Client: added [Jingle File Transfer \(XEP-0234\)](#) ¹², [Jingle In-Band Bytestreams Transport Method \(XEP-0261\)](#) ¹³
 - Advanced Client and Server: added [Bookmarks Conversion \(XEP-0411\)](#) ¹⁴
 - Specifications of note: added [In-Band Registration \(XEP-0077\)](#) ¹⁵ and [Contact Addresses for XMPP Services \(XEP-0157\)](#) ¹⁶, [Consistent Color Generation \(XEP-0392\)](#) ¹⁷, [Out-of-Band Data \(XEP-0066\)](#) ¹⁸ and [Stateless Inline Media Sharing \(XEP-0385\)](#) ¹⁹
- Mobile Category:
 - Specifications of note: added [Mobile Considerations on LTE Networks \(XEP-0286\)](#) ²⁰
- Web Category:

⁵XEP-0393: Message Styling <<https://xmpp.org/extensions/xep-0393.html>>.

⁶XEP-0433: Extended Channel Search <<https://xmpp.org/extensions/xep-0433.html>>.

⁷XEP-0424: Message Retraction <<https://xmpp.org/extensions/xep-0424.html>>.

⁸XEP-0425: Message Moderation <<https://xmpp.org/extensions/xep-0425.html>>.

⁹XEP-0412: XMPP Compliance Suites 2019 <<https://xmpp.org/extensions/xep-0412.html>>.

¹⁰XEP-0245: The /me Command <<https://xmpp.org/extensions/xep-0245.html>>.

¹¹XEP-0363: HTTP File Upload <<https://xmpp.org/extensions/xep-0363.html>>.

¹²XEP-0234: Jingle File Transfer <<https://xmpp.org/extensions/xep-0234.html>>.

¹³XEP-0261: Jingle In-Band Bytestreams Transport Method <<https://xmpp.org/extensions/xep-0261.html>>.

¹⁴XEP-0411: Bookmarks Conversion <<https://xmpp.org/extensions/xep-0411.html>>.

¹⁵XEP-0077: In-Band Registration <<https://xmpp.org/extensions/xep-0077.html>>.

¹⁶XEP-0157: Contact Addresses for XMPP Services <<https://xmpp.org/extensions/xep-0157.html>>.

¹⁷XEP-0392: Consistent Color Generation <<https://xmpp.org/extensions/xep-0392.html>>.

¹⁸XEP-0066: Out of Band Data <<https://xmpp.org/extensions/xep-0066.html>>.

¹⁹XEP-0385: Stateless Inline Media Sharing (SIMS) <<https://xmpp.org/extensions/xep-0385.html>>.

²⁰XEP-0286: Mobile Considerations on LTE Networks <<https://xmpp.org/extensions/xep-0286.html>>.

- Advanced Web: added [Discovering Alternative XMPP Connection Methods \(XEP-0156\)](#)²¹

2 Compliance Categories

2.1 Core Compliance Suite

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Core features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RFC 6120 RFC 6120: Extensible Messag- ing and Presence Protocol (XMPP): Core < http://tools.ietf.org/html/rfc6120 > RFC 7622 RFC 7622: Extensible Messag- ing and Presence Protocol (XMPP): Address Format < http://tools.ietf.org/html/rfc7622 > is not listed due to the unclear interop- erability impact of using PRECIS and Stringprep in the same ecosystem.

²¹XEP-0156: Discovering Alternative XMPP Connection Methods <<https://xmpp.org/extensions/xep-0156.html>>.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
TLS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RFC 7590 RFC 7590: Use of Transport Layer Security (TLS) in the Extensible Messag- ing and Presence Proto- col (XMPP) < http://tools.ietf.org/html/rfc7590 >
Direct TLS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Server support of XEP-0368 means having the ability to accept direct TLS connections.	<input type="checkbox"/>	SRV records for XMPP over TLS (XEP-0368) XEP-0368: SRV records for XMPP over TLS < https://xmpp.org/extensions/xep-0368.html >
Feature discovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Service Discovery (XEP-0030) XEP-0030: Service Discovery < https://xmpp.org/extensions/xep-0030.html >
Feature broadcasts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Entity Capabilities (XEP-0115) XEP-0115: Entity Capabilities < https://xmpp.org/extensions/xep-0115.html >

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Server Extensibility	<input type="checkbox"/>	N/A	<input type="checkbox"/>	N/A	Jabber Component Protocol (XEP-0114) XEP-0114: Jabber Component Protocol < https://xmpp.org/extensions/x0114.html >.
Event publishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> While 'Personal Eventing Protocol' does not require all the features of 'Publish-Subscribe' to be available on the users' JIDs, and nor does this suite, it is desirable for this to be the case and it is expected that this will a requirement of future Compliance Suites.	<input type="checkbox"/>	Personal Eventing Protocol (XEP-0163) XEP-0163: Personal Eventing Protocol < https://xmpp.org/extensions/x0163.html >.

2.2 Web Compliance Suite

To be considered XMPP web compliant, all features from the core compliance category must be met, as well as all features in this suite.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Web Connection Mechanisms	<p><input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.</p>	<p><input type="checkbox"/> Only one of the recommended providers must be implemented for compliance.</p>	<p><input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.</p>	<p><input type="checkbox"/> Only one of the recommended providers must be implemented for compliance.</p>	<p>RFC 7395 RFC 7395: An Extensible Messaging and Presence Protocol (XMPP) Subprotocol for WebSocket <http://tools.ietf.org/html/rfc7395> Over BOSH (XEP-0206) XEP-0206: XMPP Over BOSH <https://xmpp.org/extensions/0206.html>. (See also: BOSH (XEP-0124) XEP-0124: Bidirectional-streams Over Synchronous HTTP <https://xmpp.org/extensions/0124.html>.)</p>

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Connection Mechanism Discovery	<input type="checkbox"/>	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Discovering Alternative XMPP Connection Methods (XEP-0156) XEP-0156: Discovering Alternative XMPP Connection Methods < https://xmpp.org/extensions/0156.html >.

2.3 IM Compliance Suite

To be considered XMPP IM compliant, all features from the core compliance category must be met, as well as all features in this suite.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Core features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RFC 6121 RFC 6121: Ex-ten-sible Mes-sag-ing and Pres-ence Pro-tocol (XMPP): In-stant Mes-sag-ing and Pres-ence < http://tools.ietf.org/html/
The /me Command	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	The /me Com-mand (XEP-0245) XEP-0245: The /me Com-mand < https://xmpp.org/extensions/0245.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
User Avatars	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/> Not required for command line or terminal based interfaces.	User Avatar (XEP-0084) XEP-0084: User Avatar < https://xmpp.org/extensions/0084.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
User Avatar Compatibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Not	User Avatar to vCard-Based Avatars Con- ver- sion (XEP-0398) XEP-0398: User Avatar to vCard-Based Avatars Con- ver- sion < https://xmpp.org/extensions/0398.html >., vCard-Based Avatars (XEP-0153) XEP-0153: vCard-Based Avatars < https://xmpp.org/extensions/0153.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
vcard-temp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	vcard-temp (XEP-0054) XEP-0054: vcard-temp < https://xmpp.org/extensions/0054.html >.
Outbound Message Synchronization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carbons (XEP-0280) XEP-0280: Message Carbons < https://xmpp.org/extensions/0280.html >.
User Blocking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Blocking Command (XEP-0191) XEP-0191: Blocking Command < https://xmpp.org/extensions/0191.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Group Chat	<p>Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/plugins MUST be detailed.</p>	<p>Support for the Entity Use Cases and Occupant Use Cases is REQUIRED; supporting for the main use cases is RECOMMENDED; addition, the necessary components/plugins MUST be detailed.</p>	<p>Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/plugins MUST be detailed.</p>	<p>Support for the Entity Use Cases and Occupant Use Cases is REQUIRED; supporting for the main use cases is RECOMMENDED; addition, the necessary components/plugins MUST be detailed.</p>	<p>Multi-User Chat (XEP-0045) XEP-0045: Multi-User Chat <https://xmpp.org/extensions/0045.html>. Implementation should take note that future versions of these compliance suites may rely on Mediated Information eXchange (MIX) (XEP-0369) XEP-0369: Mediated Information eXchange (MIX) <https://xmpp.org/extensions/0369.html>. Instead, Direct MUC</p>

Feature	Server	Client	Advanced Server Support	Advanced Client Support	Providers
Advanced Group Chat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bookmark Storage (XEP-0048) XEP-0048: Bookmark Storage or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Persistent Storage of Private Data via PubSub	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Best Practices for Persistent Storage of Private Data via Publish-Subscribe (XEP-0223) XEP-0223: Best Practices for Persistent Storage of Private Data via Publish-Subscribe < https://xmpp.org/extensions/0223.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Private XML Storage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Private XML Storage (XEP-0049) XEP-0049: Private XML Storage < https://xmpp.org/extensions/0049.html >. (only recommended for legacy bookmarks support) In addition, the necessary components/modules/plugins MUST be detailed.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Stream Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stream Management (XEP-0198) XEP-0198: Stream Management < https://xmpp.org/extensions/0198.html >.
Message Acknowledgements	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Message Delivery Receipts (XEP-0184) XEP-0184: Message Delivery Receipts < https://xmpp.org/extensions/0184.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
History Storage / Retrieval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Message Archive Management (XEP-0313) XEP-0313: Message Archive Management < https://xmpp.org/extensions/0313.html >.
Chat States	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Chat State Notifications (XEP-0085) XEP-0085: Chat State Notifications < https://xmpp.org/extensions/0085.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Message Correction	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Last Mes- sage Cor- rec- tion (XEP- 0308) XEP- 0308: Last Mes- sage Cor- rec- tion < https://xmpp.org/extension-0308.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
File Upload	<input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.	<input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.	<input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.	<input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.	HTTP File Upload (XEP-0363) XEP-0363: HTTP File Upload < https://xmpp.org/extensions/0363.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Direct File Transfer	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Jingle File Transfer (XEP-0234) XEP-0234: Jingle File Transfer < https://xmpp.org/extensions/0234.html >., Jingle In-Band Bytestreams Transport Method (XEP-0261) XEP-0261: Jingle In-Band Bytestreams Transport Method < https://xmpp.org/extensions/0261.html >.

Further specifications of note, which are not required for compliance:

- For public IM networks: [In-Band Registration \(XEP-0077\)](#) ²² (should be supported, but not enabled in default server configurations) and [Contact Addresses for XMPP Services](#)

²²XEP-0077: In-Band Registration <<https://xmpp.org/extensions/xep-0077.html>>.

(XEP-0157) ²³

- File uploads should be indicated using [Out-of-Band Data \(XEP-0066\)](#) ²⁴, optionally also using [Stateless Inline Media Sharing \(XEP-0385\)](#) ²⁵
- [Consistent Color Generation \(XEP-0392\)](#) ²⁶ for cross-client consistency of user names
- [Message Styling \(XEP-0393\)](#) ²⁷ for simple styling of plaintext messages that is loosely compatible with legacy IM networks
- [Extended Channel Search \(XEP-0433\)](#) ²⁸ to improve the discovery of public rooms hosted on a domain
- [Message Retraction \(XEP-0424\)](#) ²⁹ and [Message Moderation \(XEP-0425\)](#) ³⁰ for managing misbehavior in public rooms

2.4 Mobile Compliance Suite

To be considered XMPP mobile compliant, all features from the core compliance category must be met, as well as all features in this suite.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Stream Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Stream Management (XEP-0198) XEP-0198: Stream Management < https://xmpp.org/extensions/0198.html >.

²³XEP-0157: Contact Addresses for XMPP Services <<https://xmpp.org/extensions/xep-0157.html>>.

²⁴XEP-0066: Out of Band Data <<https://xmpp.org/extensions/xep-0066.html>>.

²⁵XEP-0385: Stateless Inline Media Sharing (SIMS) <<https://xmpp.org/extensions/xep-0385.html>>.

²⁶XEP-0392: Consistent Color Generation <<https://xmpp.org/extensions/xep-0392.html>>.

²⁷XEP-0393: Message Styling <<https://xmpp.org/extensions/xep-0393.html>>.

²⁸XEP-0433: Extended Channel Search <<https://xmpp.org/extensions/xep-0433.html>>.

²⁹XEP-0424: Message Retraction <<https://xmpp.org/extensions/xep-0424.html>>.

³⁰XEP-0425: Message Moderation <<https://xmpp.org/extensions/xep-0425.html>>.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Client State Indication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Client State Indication (XEP-0352) XEP-0352: Client State Indication < https://xmpp.org/extensions/0352.html >.
Third Party Push Notifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Support can be enabled via an external component or an internal server module/plugin. If claiming compliance using such an addition, the necessary components/modules/plugins MUST be detailed.	<input type="checkbox"/> Only on platforms that disallow long-lasting background connections.	Push Notifications (XEP-0357) XEP-0357: Push Notifications < https://xmpp.org/extensions/0357.html >.

Further specifications of note, which are not required for compliance:

- [Mobile Considerations on LTE Networks \(XEP-0286\)](#) ³¹

2.5 A/V Calling Compliance Suite

To be considered XMPP A/V calling compliant, all features from the core compliance category must be met, as well as all features in this suite.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Call Setup	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Jingle RTP Sessions (XEP-0167) XEP-0167: Jingle RTP Sessions < https://xmpp.org/extensions/0167.html >., Jingle Message Initiation (XEP-0353) XEP-0353: Jingle Message Initiation < https://xmpp.org/extensions/0353.html >.

³¹XEP-0286: Mobile Considerations on LTE Networks <<https://xmpp.org/extensions/xep-0286.html>>.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Transport	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Jingle ICE- UDP Trans- port Method (XEP- 0176) XEP- 0176: Jingle ICE- UDP Trans- port Method < https://xmpp.org/extensions/0176.html >.
Encryption	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Use of DTLS- SRTP in Jingle Ses- sions (XEP- 0320) XEP- 0320: Use of DTLS- SRTP in Jingle Ses- sions < https://xmpp.org/extensions/0320.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
STUN/TURN server discovery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	External Service Discovery (XEP-0215) XEP-0215: External Service Discovery < https://xmpp.org/extensions/0215.html >.

Feature	Server	Client	Advanced Server	Advanced Client	Providers
Quality and Performance improvements	N/A	<input type="checkbox"/>	N/A	<input type="checkbox"/>	Jingle RTP Feedback Negotiation (XEP-0293) XEP-0293: Jingle RTP Feedback Negotiation< https://xmpp.org/extensions/2009/02/0293.html >., Jingle RTP Header Extensions Negotiation (XEP-0294) XEP-0294: Jingle RTP Header Extensions Negotiation < https://xmpp.org/extensions/2009/02/0294.html >., Jingle Grouping Framework (XEP-0338) XEP-0338: Jingle Grouping Framework < https://xmpp.org/extensions/2009/02/0338.html >., Source-Specific

3 Future Development

This section outlines the protocol specifications that are relevant for developers, but are not ready yet to be required for Compliance. Developers are encouraged to implement those and to share their experience and feedback.

- Client connection optimizations: [Bind 2.0 \(XEP-0386\)](#)³² and [IM Routing-NG \(XEP-0409\)](#)³³, maybe also [Instant Stream Resumption \(XEP-0397\)](#)³⁴
- Improved on-boarding of new users:
 - [Easy User Onboarding \(XEP-0401\)](#)³⁵ to create account invitations
 - [Pre-Authenticated Roster Subscription \(XEP-0379\)](#)³⁶ for contact invitations
 - [Pre-Authenticated In-Band Registration \(XEP-0445\)](#)³⁷ to register accounts based on an invitation
- [Chat Markers \(XEP-0333\)](#)³⁸
- [Mediated Information eXchange \(MIX\) \(XEP-0369\)](#)³⁹
- End-to-End Encryption (E2EE): [Explicit Message Encryption \(XEP-0380\)](#)⁴⁰ for tagging encrypted messages, [Stanza Content Encryption \(XEP-0420\)](#)⁴¹ to protect all payloads; and also one or multiple of the following for actual encryption:
 - [OMEMO Encryption \(XEP-0384\)](#)⁴² and [Jingle Encrypted Transports - OMEMO \(XEP-0396\)](#)⁴³
 - [OpenPGP for XMPP Instant Messaging \(XEP-0374\)](#)⁴⁴
- [PEP Native Bookmarks \(XEP-0402\)](#)⁴⁵ to phase out [Bookmark Storage \(XEP-0048\)](#)⁴⁶ and [Private XML Storage \(XEP-0049\)](#)⁴⁷

³²XEP-0386: Bind 2.0 <<https://xmpp.org/extensions/xep-0386.html>>.

³³XEP-0409: IM Routing-NG <<https://xmpp.org/extensions/xep-0409.html>>.

³⁴XEP-0397: Instant Stream Resumption <<https://xmpp.org/extensions/xep-0397.html>>.

³⁵XEP-0401: Easy User Onboarding <<https://xmpp.org/extensions/xep-0401.html>>.

³⁶XEP-0379: Pre-Authenticated Roster Subscription <<https://xmpp.org/extensions/xep-0379.html>>.

³⁷XEP-0445: Pre-Authenticated In-Band Registration <<https://xmpp.org/extensions/xep-0445.html>>.

³⁸XEP-0333: Chat Markers <<https://xmpp.org/extensions/xep-0333.html>>.

³⁹XEP-0369: Mediated Information eXchange (MIX) <<https://xmpp.org/extensions/xep-0369.html>>.

⁴⁰XEP-0380: Explicit Message Encryption <<https://xmpp.org/extensions/xep-0380.html>>.

⁴¹XEP-0420: Stanza Content Encryption <<https://xmpp.org/extensions/xep-0420.html>>.

⁴²XEP-0384: OMEMO Encryption <<https://xmpp.org/extensions/xep-0384.html>>.

⁴³XEP-0396: Jingle Encrypted Transports - OMEMO <<https://xmpp.org/extensions/xep-0396.html>>.

⁴⁴XEP-0374: OpenPGP for XMPP Instant Messaging <<https://xmpp.org/extensions/xep-0374.html>>.

⁴⁵XEP-0402: PEP Native Bookmarks <<https://xmpp.org/extensions/xep-0402.html>>.

⁴⁶XEP-0048: Bookmark Storage <<https://xmpp.org/extensions/xep-0048.html>>.

⁴⁷XEP-0049: Private XML Storage <<https://xmpp.org/extensions/xep-0049.html>>.

- [Component Connections \(XEP-0225\)](#) ⁴⁸ to phase out [Jabber Component Protocol \(XEP-0114\)](#) ⁴⁹
- [Entity Capabilities 2.0 \(XEP-0390\)](#) ⁵⁰ to phase out [Entity Capabilities \(XEP-0115\)](#) ⁵¹
- [Service Outage Status \(XEP-0455\)](#) ⁵²

4 Implementation Notes

Some of the protocol specifications referenced herein have their own dependencies; developers need to consult the relevant specifications for further information.

5 Security Considerations

This document introduces no additional security considerations above and beyond those defined in the documents on which it depends.

6 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#) ⁵³.

7 XMPP Registrar Considerations

This document requires no interaction with the [XMPP Registrar](#) ⁵⁴.

⁴⁸XEP-0225: Component Connections <<https://xmpp.org/extensions/xep-0225.html>>.

⁴⁹XEP-0114: Jabber Component Protocol <<https://xmpp.org/extensions/xep-0114.html>>.

⁵⁰XEP-0390: Entity Capabilities 2.0 <<https://xmpp.org/extensions/xep-0390.html>>.

⁵¹XEP-0115: Entity Capabilities <<https://xmpp.org/extensions/xep-0115.html>>.

⁵²XEP-0455: Service Outage Status <<https://xmpp.org/extensions/xep-0455.html>>.

⁵³The 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/>>.

⁵⁴The 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/>>.

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