



XEP-0156: Discovering Alternative XMPP Connection Methods

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This document defines a DNS TXT Resource Record format for use in discovering alternative methods of connecting to an XMPP server.

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1 Introduction

Although [XMPP Core](#)¹ specifies the use of TCP as the method of connecting to an XMPP server, alternative connection methods exist, including the [BOSH](#)² method for which [XMPP Over BOSH](#)³ is the XMPP profile, the [Jabber HTTP Polling](#)⁴ method (now deprecated), and less common methods such as [Wireless Access Protocol \(WAP\)](#)⁵. For some of these methods, it is necessary to discover further parameters before connecting, such as the HTTP URL of an alternative connection manager. Currently, if a client application needs to discover alternative connection methods before connecting to an XMPP service, the relevant information needs to be provided manually by a human user, which is cumbersome and error-prone. Thankfully, there are several potential ways to complete this pre-connection service discovery in an automated fashion:

1. Define a [WSDL](#)⁶ definition (or other XML file format) and a canonical URL for that definition at a domain that offers XMPP services. Unfortunately, this approach requires access to the HTTP server for the domain (and quite possibly to the root directory thereof), which can be difficult for XMPP server administrators to arrange. In addition, it requires a client to retrieve the relevant file via HTTP before performing DNS lookups and XMPP connection; it would be more efficient to use recognized DNS methods since DNS lookups are already required by RFC 6120.
2. Define a way to specify alternative connection methods as part of the existing DNS SRV records (see [RFC 2782](#)⁷) for a domain that offers XMPP services. While this approach sounds promising, it is not feasible since the DNS SRV Target field can be used only to specify domain names and cannot be used to specify full URIs (such as the URL for an HTTP connection manager).
3. Define a way to specify alternative connection methods using the "straightforward NAPTR" (S-NAPTR) profile of the Dynamic Delegation Discovery System (see [RFC 3958](#)⁸ and [RFC 3401](#)⁹). Unfortunately, S-NAPTR also does not allow inclusion of full URIs, and thus does not meet the requirements for discovery of alternative connection methods.

¹RFC 6120: Extensible Messaging and Presence Protocol (XMPP): Core <<http://tools.ietf.org/html/rfc6120>>.

²XEP-0124: Bidirectional-streams Over Synchronous HTTP <<http://xmpp.org/extensions/xep-0124.html>>.

³XEP-0206: XMPP Over BOSH <<http://xmpp.org/extensions/xep-0206.html>>.

⁴XEP-0025: Jabber HTTP Polling <<http://xmpp.org/extensions/xep-0025.html>>.

⁵Wireless Access Protocol (WAP) <<http://www.wapforum.org/>>.

⁶WSDL 1.1 Specification <<http://www.w3.org/TR/wsdl>>.

⁷RFC 2782: A DNS RR for specifying the location of services (DNS SRV) <<http://tools.ietf.org/html/rfc2782>>.

⁸RFC 3958: Domain-Based Application Service Location Using SRV RRs and the Dynamic Delegation Discovery Service (DDDS) <<http://tools.ietf.org/html/rfc3958>>.

⁹RFC 3401: Dynamic Delegation Discovery System (DDDS) Part One: The Comprehensive DDDS <<http://tools.ietf.org/html/rfc3401>>.

4. Define a way to specify alternative connection methods using the "URI-enabled NAPTR" (U-NAPTR) profile of the Dynamic Delegation Discovery System (see [RFC 4848](#)¹⁰). While this is a valid approach that is worth pursuing, the authors are concerned about the deployability of such an approach given the rarity of support for DDDS and U-NAPTR, especially in client-side applications (the main focus of this specification).
5. Define a way to specify alternative connection methods via properly-formatted DNS TXT records (see [RFC 1464](#)¹¹). While this approach requires an update to the DNS records for the server domain, that is usually necessary in order to establish XMPP services in the first place. Furthermore, although there are some perils to be avoided in the use of DNS TXT records (e.g., wildcards), the technology is well understood and widely deployed (e.g., it is used by the [Sender Policy Framework](#) and [SenderID](#) email server verification technologies).

This document defines a way to encapsulate information about alternative connection methods in DNS TXT resource records. However, the authors will monitor the availability of DDDS-based systems supporting U-NAPTR, and might request deprecation of the DNS TXT methods defined in this document at some point in the future.

2 Record Format

The following format for DNS TXT resource records is specified in RFC 1464:

```
<owner> <class> <ttl> <TXT> <"attribute_name=attribute_value">
```

This document specifies that the following additional rules apply for DNS TXT resource records used to specify alternative connection methods:

1. It is RECOMMENDED for the owner to be "_xmppconnect".
2. The class field SHOULD be IN.
3. The ttl field is OPTIONAL.
4. The attribute name SHOULD begin with the string "_xmpp-client-" or "_xmpp-server-" and SHOULD be registered as described in the [XMPP Registrar Considerations](#) section of this document.

¹⁰RFC 4848: Domain-Based Application Service Location Using URIs and the Dynamic Delegation Discovery Service (DDDS) <<http://tools.ietf.org/html/rfc4848>>.

¹¹RFC 1464: Using the Domain Name System To Store Arbitrary String Attributes <<http://tools.ietf.org/html/rfc1464>>.

5. If the txt-data field contains only an attribute name (i.e., no unquoted "=" character followed by additional characters), the receiving application SHOULD interpret it as indicating the presence of the attribute or feature with no defined value.
6. If the txt-data field contains an unquoted "=" character, it MUST also contain an attribute value.

3 Business Rules

The following business rules apply:

1. TXT lookups MUST be used only as a fallback after the methods specified in RFC 6120 have been exhausted. ¹²
2. A domain SHOULD NOT present information in DNS TXT records that is available via the DNS SRV records defined in RFC 6120.
3. The order of DNS TXT records SHOULD NOT be interpreted as significant by the presenting domain or the receiving entity.

4 Examples

The following examples show two DNS TXT resource records: the first indicates support for the XMPP Over BOSH connection method defined in XEP-0124 and XEP-0206 and the second indicates support for WAP connections (the latter connection method is not yet defined).

Listing 1: TXT Resource Records

```
_xmppconnect IN TXT "_xmpp-client-xbosh=https://bosh.jabber.org:5280/  
bind"  
_xmppconnect IN TXT "_xmpp-client-wap=http://wap.jabber.org/connector"
```

5 Security Considerations

It is possible that advertisement of alternative connection methods can introduce security vulnerabilities, since a connecting entity (usually a client) might deliberately seek to connect using the method with the weakest security mechanisms (e.g., no channel encryption or relatively weak authentication). Care needs to be taken in determining which alternative connection methods are appropriate to advertise.

¹²The point of this rule is to prevent someone from defining a new XEP-0156 connection method like "_xmpp-client-tcp" to override the SRV records defined in the core XMPP specification.

6 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)¹³.

7 XMPP Registrar Considerations

7.1 Alternative Connection Methods Registry

The [XMPP Registrar](#)¹⁴ maintains a registry of attributes for use in DNS TXT resource records that advertise alternative XMPP connection methods (see <http://xmpp.org/registrar/alt-connections.html>).

7.1.1 Process

In order to submit new values to this registry, the registrant shall define an XML fragment of the following form and either include it in the relevant XMPP Extension Protocol or send it to the email address registrar@xmpp.org:

```
<method>
  <name>the name of the attribute to be used in DNS TXT records</name>
  <desc>a natural-language description of the alternative connection
    method</desc>
  <syntax>the syntax of the DNS TXT record attribute value</syntax>
  <doc>the document in which the alternative connection method is
    specified</doc>
</method>
```

The registrant can register more than one attribute at a time, each contained in a separate `<method/>` element.

7.1.2 Initial Registration

```
<method>
  <name>_xmpp-client-httpoll</name>
  <desc>HTTP Polling connection method</desc>
```

¹³The 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/>.

¹⁴The 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/>.

```
<syntax>
  The http: or https: URL at which to contact the HTTP Polling
  connection manager or proxy
</syntax>
<doc>XEP-0025</doc>
</method>

<method>
  <name>_xmpp-client-xbosh</name>
  <desc>XMPP Over Bosh connection method</desc>
  <syntax>
    The http: or https: URL at which to contact the HTTP Binding
    connection manager or proxy
  </syntax>
  <doc>XEP-0206</doc>
</method>
```