



# XMPP

## XEP-0229: Stream Compression with LZW

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This document specifies how to use the LZW algorithm in XML stream compression.

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## 1 Introduction

[Stream Compression \(XEP-0138\)](#)<sup>1</sup> specifies an extensible framework for XML stream compression and defines a registry for compression methods (see <https://xmpp.org/registry/compress.html>). However, XEP-0138 registers only the ZLIB method (see [RFC 1950](#)<sup>2</sup>). This document specifies usage of the LZW compression method.

## 2 Background

The "LZW" compression algorithm was originally developed by Abraham Lempel and Jacob Ziv, subsequently improved by Terry Welch<sup>3</sup>, and patented by Sperry Corporation (later Unisys Corporation) as U.S. Patent Number 4,464,650<sup>4</sup>. This patent expired on June 20, 2003<sup>5</sup> and<sup>6</sup>. Therefore implementations of LZW are no longer patent-encumbered. The algorithm is specified by Ecma International in [Standard ECMA-151](#)<sup>7</sup> under the name "DCLZ".

## 3 Definition

If the receiving entity (server) supports the LZW algorithm, it MUST include a `<method/>` element whose XML character data is "lzw" in the compression stream feature, as follows.

Listing 1: Receiving Entity Offers Stream Compression Feature, Including LZW Method

```
<stream:features>
  <starttls xmlns='urn:ietf:params:xml:ns:xmpp-tls' />
  <compression xmlns='http://jabber.org/features/compress'>
    <method>zlib</method>
    <method>lzw</method>
  </compression>
</stream:features>
```

If the initiating entity wishes to use the LZW algorithm, then it MUST specify that method.

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Listing 2: Initiating Entity Requests Stream Compression Using LZW

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<sup>1</sup>XEP-0138: Stream Compression <https://xmpp.org/extensions/xep-0138.html>.

<sup>2</sup>RFC 1950: ZLIB Compressed Data Format Specification version 3.3 <http://tools.ietf.org/html/rfc1950>.

<sup>3</sup>See "A Technique for High-Performance Data Compression", Computer (June 1984), pp. 8-19.

<sup>4</sup>See <http://patft.uspto.gov/netacgi/nph-Parser?patentnumber=4,464,650>.

<sup>5</sup>See [http://compression-links.info/Link/1264\\_LZW\\_Patent\\_Expiration.htm](http://compression-links.info/Link/1264_LZW_Patent_Expiration.htm)

<sup>6</sup>See [http://compression-links.info/Link/1814\\_LZW\\_Patent\\_Expiration.htm](http://compression-links.info/Link/1814_LZW_Patent_Expiration.htm).

<sup>7</sup>Standard ECMA-151: Data Compression for Information Interchange - Adaptive Coding with Embedded Dictionary - DLCZ Algorithm <http://www.ecma-international.org/publications/standards/Ecma-151.htm>.

```
<compress xmlns='http://jabber.org/protocol/compress'>
  <method>lzw</method>
</compress>
```

The initiating entity and receiving entity then MUST attempt to negotiate use of the LZW algorithm in accordance with XEP-0138.

If the use of the LZW algorithm is negotiated, the usage SHOULD follow the definition in ECMA-151.

## 4 Optionality

The LZW algorithm is OPTIONAL to implement for XEP-0138 implementations and this specification does not define a mandatory-to-implement technology.

## 5 Security Considerations

Due to attacks like [CRIME](#) that apply equally to the lzw method defined here, this method is deemed insecure.

## 6 IANA Considerations

This document requires no interaction with the [Internet Assigned Numbers Authority \(IANA\)](#)<sup>8</sup>.

## 7 XMPP Registrar Considerations

### 7.1 Compression Methods Registry

The [XMPP Registrar](#)<sup>9</sup> maintains a registry of compression methods at [<https://xmpp.org/registrar/compress.html>](https://xmpp.org/registrar/compress.html).

The LZW algorithm is already registered. This specification updates the registry submission as follows:

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<sup>8</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/>](http://www.iana.org/).

<sup>9</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/>](https://xmpp.org/registrar/).

```
<method>
  <name>lzw</name>
  <desc>the LZW (DCLZ) compression method</desc>
  <doc>XEP-0229</doc>
</method>
```