

The IMAP COMPRESS=DEFLATE extension

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Abstract

The COMPRESS=DEFLATE extension allows an IMAP connection to be compressed using the DEFLATE algorithm, such that effective compression is available even when TLS is used.

Conventions Used in This Document

The key words "REQUIRED", "MUST", "MUST NOT", "SHOULD", "SHOULD NOT", and "MAY" in this document are to be interpreted as described in "Key words for use in RFCs to Indicate Requirement Levels"

[[KEYWORDS](#)]. Formal syntax is defined by [[ABNF](#)] as modified by [[IMAP](#)].

In the example, "C:" and "S:" indicate lines sent by the client and server respectively.

Introduction and Overview

An IMAP server that supports this extension announces "COMPRESS=DEFLATE" as one of its capabilities.

The goal of COMPRESS=DEFLATE is to reduce the bandwidth usage of IMAP. On regular IMAP connections, the PPP or MNP compression used with many low-bandwidth links compresses IMAP well. However, when TLS is used, PPP/MNP compression is ineffective. TLS too may provide compression, but few or no implementations do so in practice (perhaps for patent reasons).

In order to increase interoperation, it is desirable to have as few different compression algorithms as possible, so this document specifies only one. The DEFLATE algorithm is standard, widely available, unencumbered by patents and fairly efficient. Hopefully it will not be necessary to define additional algorithms.

The extension adds one new command (COMPRESS) and no new responses.

The COMPRESS Command

Arguments: Name of compression mechanism: "DEFLATE".

Responses: None

Result: OK	The server will compress its responses and expects the client to compress its commands.
NO	The connection already is compressed, or the server doesn't support the requested mechanism.
BAD	Command unknown or invalid argument.

The COMPRESS command instructs the server to use the named compression mechanism ("DEFLATE" is the only one defined) for future commands and responses.

For DEFLATE (as for many other compression mechanisms), the compressor can trade speed against quality. When decompressing there isn't much of a tradeoff. Consequently, the client and server are both free to pick the best reasonable rate of compression for

the data they send.

The client **MUST NOT** send additional commands until it has seen the result of COMPRESS.

If both TLS and COMPRESS are in use, the data should be compressed before it is encrypted (and decrypted before it is decompressed).

Example

This example shows a simple login sequence. The client uses TLS for privacy and [\[DEFLATE\]](#) for compression.

```
S: * OK [CAPABILITY IMAP4REV1 STARTTLS COMPRESS=DEFLATE]
C: a starttls
S: a OK
C: b compress deflate
S: b OK
C: c login arnt tnra
S: c OK
```

Implementation Notes

When using the zlib library (see [\[DEFLATE\]](#)), the functions deflateInit(), deflate(), inflateInit() and inflate() suffice to implement this extension.

Note that when using TLS, compression may actually decrease the CPU usage, depending on which algorithms are used in TLS. This is because fewer bytes need to be encrypted, and encryption is generally more expensive than compression.

Formal Syntax

The following syntax specification uses the Augmented Backus-Naur Form (ABNF) notation as specified in [\[ABNF\]](#). Non-terminals referenced but not defined below are as defined by [\[ABNF\]](#) (SP, CRLF) or [\[IMAP\]](#) (all others).

Except as noted otherwise, all alphabetic characters are case-insensitive. The use of upper or lower case characters to define token strings is for editorial clarity only. Implementations **MUST** accept these strings in a case-insensitive fashion.

```
command-any =/ compress
```


compress = "COMPRESS" SP astring

Security considerations

(As for [[TLSCOMP](#)] [RFC 3749](#).)

IANA considerations

The IANA is requested to add COMPRESS=DEFLATE to the list of IMAP extensions.

Credits

(Your name here :)

Normative References

- [ABNF] Crocker, Overell, "Augmented BNF for Syntax Specifications: ABNF", [RFC 2234](#), Internet Mail Consortium, Demon Internet Ltd, November 1997.
- [IMAP] Crispin, "Internet Message Access Protocol - Version 4rev1", [RFC 3501](#), University of Washington, June 2003.
- [KEYWORDS] Bradner, "Key words for use in RFCs to Indicate Requirement Levels", [RFC 2119](#), Harvard University, March 1997.
- [DEFLATE] Deutsch, "DEFLATE Compressed Data Format Specification version 1.3", [RFC 1951](#), Aladdin Enterprises, May 1996.
- [STARTTLS] Newman, C. "Using TLS with IMAP, POP3 and ACAP", [RFC 2595](#), June 1999.

Informative References

- [TLSCOMP] Hollenbeck, "Transport Layer Security Protocol Compression Methods", [RFC 3749](#), VeriSign, May 2004.

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