

# [MS-MCI]: MCI Compression and Decompression

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Revision Summary
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# 1 Introduction

This document specifies the format of MSZIP compressed data as used in the MSZIP compression mode of **cabinet files**. The purpose of this specification is to enable anyone to encode or decode MSZIP compressed data.

## 1.1 Glossary

The following terms are defined in [MS-OXGLOS]:

**ASCII**  
**cabinet file**  
**cabinet folder**  
**little-endian**  
**Unicode**

The following terms are specific to this document:

**RFC 1951 block**: A compressed block format as defined in [RFC1951] section 3.2.

**MSZIP block**: One or more **RFC 1951 blocks** with an **MSZIP signature**.

**MSZIP signature**: The first two bytes of the **MSZIP block** that demarcate a unique **MSZIP block**.

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT**: These terms (in all caps) are used as described in [RFC2119]. All statements of optional behavior use either **MAY**, **SHOULD**, or **SHOULD NOT**.

## 1.2 References

### 1.2.1 Normative References

[MS-CAB] Microsoft Corporation, "Cabinet File Format", June 2008.

[RFC1951] Deutsch, P., "DEFLATE Compressed Data Format Specification version 1.3", RFC 1951, May 1996, <http://www.ietf.org/rfc/rfc1951.txt>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.ietf.org/rfc/rfc2119.txt>.

### 1.2.2 Informative References

None.

### 1.3 Structure Overview

MSZIP compression is a derivative of Phil Katz's DEFLATE Compressed Data Format. For more information about the DEFLATE Compressed Data Format, see [RFC1951]. MSZIP uses only the three basic modes of deflate: no compression, compressed with fixed Huffman codes, and compressed with dynamic Huffman codes.

### 1.4 Relationship to Protocols and Other Structures

None.

### 1.5 Applicability Statement

None.

### 1.6 Versioning and Localization

None.

### 1.7 Vendor-Extensible Fields

None.

## 2 Structures

Each **MSZIP block** MUST consist of a 2-byte **MSZIP signature** and one or more **RFC 1951 blocks**. The 2-byte MSZIP signature MUST consist of the bytes 0x43 and 0x4B. The MSZIP signature MUST be the first 2 bytes in the MSZIP block. The MSZIP signature is shown in the following diagram.

0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
<b>MSZIP Signature Byte 0</b>								<b>MSZIP Signature Byte 1</b>							

**MSZIP Signature Byte 0:** The first byte of the MSZIP signature MUST be set to 0x43.

**MSZIP Signature Byte 1:** The second byte of the MSZIP signature MUST be set to 0x4B.

Each MSZIP block is the result of a single deflate compression operation, as defined in [RFC1951]. The compressor that performs the compression operation MUST generate one or more RFC 1951 blocks, as defined in [RFC1951]. The number, deflation mode, and type of RFC 1951 blocks in each MSZIP block is determined by the compressor, as defined in [RFC1951]. Each RFC 1951 block MUST be flushed out of the compressor before the next block begins. The last RFC 1951 block in each MSZIP block MUST be marked as the "end" of the stream, as defined by [RFC1951] section 3.2.3. Decoding trees MUST be discarded after each RFC 1951 block. Each MSZIP block that is not the last MSZIP block in a **cabinet**

**folder** MUST represent 32 KB of uncompressed data. The last block in a cabinet folder can be smaller than 32 KB of uncompressed data.

The maximum compressed size of each MSZIP block is 32 KB + 12 bytes. This allows for the data to be passed as two separate RFC 1951 blocks. Each RFC 1951 block can have a 5-byte overhead. The two separate RFC 1951 blocks with 5 bytes of overhead each, combined with the 2-byte MSZIP signature, constitute the 12 bytes in addition to the 32 KB of data contained in an MSZIP block. MSZIP MUST use a compression window of size 32 KB.

### 3 Structure Examples

The following **MSZIP block** structure contains a single compressed **RFC 1951 block**.

<= (32 KB+12 bytes)	
0x43   0x4B	Generated by single "deflate" compression operation
2-Byte <b>MSZIP Signature</b>	RFC 1951 Block

The MSZIP block structure shown below contains two RFC 1951 blocks.

<= (32 KB+ 12 bytes)		
0x43   0x4B	Generated by single "deflate" compression operation	
2-Byte MSZIP Signature	RFC 1951 Block	RFC 1951 Block

### 4 Security Considerations

None.

### 5 Appendix A: Office/Exchange Behavior

The information in this specification is applicable to the following versions of Office/Exchange:

- Microsoft Exchange Server 2003
- Microsoft Exchange Server 2007

- Microsoft Exchange Server 2010

Exceptions, if any, are noted below. Unless otherwise specified, any statement of optional behavior in this specification prescribed using the terms SHOULD or SHOULD NOT implies Office/Exchange behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term MAY implies Office/Exchange does not follow the prescription.

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