

Internet Engineering Task Force  
Internet-Draft  
Intended status: Informational  
Expires: 25 April 2022

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22 October 2021

WebP Image Format Media Type Registration  
draft-zern-webp-05

## Abstract

WebP is a RIFF-based image file format which supports lossless and lossy compression as well as alpha (transparency) and animation. It covers use cases similar to JPEG, PNG and GIF.

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## [1.](#) Introduction

This document provides references for the WebP image format and considerations for its use across platforms.

WebP is a Resource Interchange File Format (RIFF) [[riff-spec](#)] based image file format [[webp-riff](#)] which supports lossless and lossy compression as well as alpha (transparency) and animation. It covers use cases similar to JPEG [[jpeg-spec](#)], PNG [[RFC2083](#)] and the Graphics Interchange Format (GIF) [[gif-spec](#)].

WebP consists of two compression algorithms used to reduce the size of image pixel data, including alpha (transparency) information. Lossy compression is achieved using VP8 intra-frame encoding [[RFC6386](#)]. The lossless algorithm [[webp-lossless](#)] stores and restores the pixel values exactly, including the color values for zero alpha pixels. The format uses subresolution images, recursively embedded into the format itself, for storing statistical data about the images, such as the used entropy codes, spatial predictors, color space conversion, and color table. LZ77 [[lz77](#)], Huffman coding [[huffman](#)], and a color cache are used for compression of the bulk data.

## [2.](#) The 'image/webp' Media Type

This section contains the media type registration details as per [[RFC6838](#)].

### [2.1.](#) Registration Details

Type name: image

Subtype name: webp

Required parameters: N/A

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Optional parameters: N/A

Encoding considerations: Binary. The Base64 encoding [[RFC4648](#)] should be used on transports that cannot accommodate binary data directly.

Security considerations: See [Section 3](#) below.

Interoperability considerations: See [Section 4](#) below.

Published specification: [[webp-riff](#)]

Applications that use this media type: Applications that are used to display and process images, especially when smaller image file sizes are important.

Fragment identifier considerations: N/A

Additional information:

Deprecated alias names for this type: N/A

Magic number(s): The first 4 bytes are 0x52, 0x49, 0x46, 0x46 ('RIFF'), followed by 4 bytes for the RIFF chunk size. The next 7 bytes are 0x57, 0x45, 0x42, 0x50, 0x56, 0x50, 0x38 ('WEBPVP8').

File extension(s): webp

Apple Uniform Type Identifier: org.webmproject.webp conforms to public.image

Object Identifiers: N/A

Person & email address to contact for further information:

Name: James Zern

Email: jzern@google.com

Intended usage: COMMON

Restrictions on usage: N/A

Author:

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Change controller:

Name: James Zern

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Name: Pascal Massimino

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Provisional registration? (standards tree only): N/A

### 3. Security Considerations

Security risks are similar to other media content and may include integer overflows, out-of-bounds reads and writes to both heap and stack, uninitialized data usage, null pointer references, resource (disk, memory) exhaustion and extended resource usage (long running time) as part of the demuxing and decoding process. These may cause information leakage (memory layout and contents) or crashes and thereby denial of service to an application using the format.

[[cve.mitre.org-libwebp](https://cve.mitre.org/libwebp)] [[crbug-security](https://crbug-security)].

### 4. Interoperability Considerations

The format is defined using little-endian byte ordering (see [Section 3.1 of \[RFC2781\]](#)), but demuxing and decoding are possible on platforms using a different ordering with the appropriate conversion. The container is RIFF-based and allows extension via user defined

chunks, but nothing beyond the chunks defined by the container format [webp-riff] are required for decoding of the image. These have been finalized, but were extended in the format's early stages so some older readers may not support lossless or animated image decoding.

## [5.](#) IANA Considerations

IANA has updated the "Image Media Types" registry to include 'image/webp' as described in [Section 2](#).

## [6.](#) References

### [6.1.](#) Normative References

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cvekey.cgi?keyword=libwebp](https://cve.mitre.org/cgi-bin/cvekey.cgi?keyword=libwebp)>.
- [gif-spec] "GIF89a Specification",  
<<https://www.w3.org/Graphics/GIF/spec-gif89a.txt>>.
- [huffman] Huffman, D. A., "A Method for the Construction of Minimum Redundancy Codes", Proceedings of the Institute of Radio Engineers Number 9, pp. 1098–1101., September 1952.
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- [RFC2083] Boutell, T., "PNG (Portable Network Graphics) Specification Version 1.0", [RFC 2083](#), DOI 10.17487/RFC2083, March 1997, <<https://www.rfc-editor.org/info/rfc2083>>.
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mmssp.ece.mcgill.ca/Documents/AudioFormats/WAVE/Docs/  
riffmci.pdf](http://www-mmssp.ece.mcgill.ca/Documents/AudioFormats/WAVE/Docs/riffmci.pdf)>.

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