

[MS-PNG]:

Internet Explorer Portable Network Graphics (PNG) Standards Support Document

Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation (“this documentation”) for protocols, file formats, data portability, computer languages, and standards support. Additionally, overview documents cover inter-protocol relationships and interactions.
- **Copyrights.** This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you can make copies of it in order to develop implementations of the technologies that are described in this documentation and can distribute portions of it in your implementations that use these technologies or in your documentation as necessary to properly document the implementation. You can also distribute in your implementation, with or without modification, any schemas, IDLs, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications documentation.
- **No Trade Secrets.** Microsoft does not claim any trade secret rights in this documentation.
- **Patents.** Microsoft has patents that might cover your implementations of the technologies described in the Open Specifications documentation. Neither this notice nor Microsoft's delivery of this documentation grants any licenses under those patents or any other Microsoft patents. However, a given Open Specifications document might be covered by the Microsoft [Open Specifications Promise](#) or the [Microsoft Community Promise](#). If you would prefer a written license, or if the technologies described in this documentation are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting iplg@microsoft.com.
- **License Programs.** To see all of the protocols in scope under a specific license program and the associated patents, visit the [Patent Map](#).
- **Trademarks.** The names of companies and products contained in this documentation might be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit www.microsoft.com/trademarks.
- **Fictitious Names.** The example companies, organizations, products, domain names, email addresses, logos, people, places, and events that are depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

Reservation of Rights. All other rights are reserved, and this notice does not grant any rights other than as specifically described above, whether by implication, estoppel, or otherwise.

Tools. The Open Specifications documentation does not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments, you are free to take advantage of them. Certain Open Specifications documents are intended for use in conjunction with publicly available standards specifications and network programming art and, as such, assume that the reader either is familiar with the aforementioned material or has immediate access to it.

Support. For questions and support, please contact dochelp@microsoft.com.

Revision Summary

Date	Revision History	Revision Class	Comments
3/17/2010	0.1	New	Released new document.
3/26/2010	1.0	None	Introduced no new technical or language changes.
5/26/2010	1.2	None	Introduced no new technical or language changes.
7/25/2012	1.3	Minor	Clarified the meaning of the technical content.
3/31/2014	1.3	None	No changes to the meaning, language, or formatting of the technical content.
11/2/2015	1.3	None	No changes to the meaning, language, or formatting of the technical content.
1/20/2016	1.4	Minor	Clarified the meaning of the technical content.
3/22/2016	1.4	None	No changes to the meaning, language, or formatting of the technical content.
11/2/2016	1.4	None	No changes to the meaning, language, or formatting of the technical content.
3/14/2017	1.4	None	No changes to the meaning, language, or formatting of the technical content.
10/3/2017	1.4	None	No changes to the meaning, language, or formatting of the technical content.
2/22/2018	1.4	None	No changes to the meaning, language, or formatting of the technical content.
3/23/2018	1.4	None	No changes to the meaning, language, or formatting of the technical content.
8/28/2018	1.4	None	No changes to the meaning, language, or formatting of the technical content.

Table of Contents

1	Introduction	4
1.1	Glossary	4
1.2	References	4
1.2.1	Normative References	4
1.2.2	Informative References	4
1.3	Microsoft Implementations	4
1.4	Standards Support Requirements	6
1.5	Notation.....	6
2	Standards Support Statements.....	7
2.1	Normative Variations	7
2.1.1	[W3C-PNG] Section 4.2, Colour spaces.....	7
2.1.2	[W3C-PNG] Section 4.6, Additional information	7
2.1.3	[W3C-PNG] Section 4.7.2, Chunk types.....	8
2.1.4	[W3C-PNG] Section 11.3.3.1, cHRM Primary chromaticities and white point	8
2.1.5	[W3C-PNG] Section 11.3.3.2, gAMA Image gamma	8
2.1.6	[W3C-PNG] Section 11.3.3.3, iCCP Embedded ICC profile	9
2.1.7	[W3C-PNG] Section 11.3.3.4, sBIT Significant bits.....	9
2.1.8	[W3C-PNG] Section 11.3.3.5, sRGB Standard RGB colour space	9
2.1.9	[W3C-PNG] Section 11.3.4, Textual information	9
2.1.10	[W3C-PNG] Section 11.3.5, hIST Image histogram	9
2.1.11	[W3C-PNG] Section 11.3.5.3, pHYs Physical pixel dimensions	10
2.1.12	[W3C-PNG] Section 11.3.5.4, sPLT Suggested palette	10
2.1.13	[W3C-PNG] Section 11.3.6, tIME Image last-modification timev	10
2.1.14	[W3C-PNG] Section 12, PNG Encoders	10
2.2	Clarifications	10
2.3	Error Handling	10
2.4	Security	10
3	Change Tracking.....	11
4	Index.....	12

1 Introduction

This document describes the level of support provided by Windows Internet Explorer 7 and Windows Internet Explorer 8 for the *Portable Network Graphics (PNG) Specification (Second Edition)* [W3C-PNG] W3C Recommendation 10 November 2003 Windows Internet Explorer displays webpages written in HTML.

The [W3C-PNG] specification may contain guidance for authors of webpages and browser users, in addition to user agents (browser applications). Statements found in this document apply only to normative requirements in the specification targeted to user agents, not those targeted to authors.

1.1 Glossary

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

1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact dochelp@microsoft.com. We will assist you in finding the relevant information.

[IEC-RGB] International Electrotechnical Commission, "Colour Measurement and Management in Multimedia Systems and Equipment - Part 2-1: Default RGB Colour Space - sRGB", October 1999, <http://webstore.iec.ch/webstore/webstore.nsf/artnum/025408>

[ISO-3664] International Organization for Standardization, "Viewing conditions -- Graphic technology and photography", ISO 3664:2000 September 2000, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=9117

Note This standard has been revised by ISO 3664:2009.

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

[W3C-PNG] World Wide Web Consortium, "Portable Network Graphics (PNG) Specification, Second Edition", November 2003, <http://www.w3.org/TR/PNG>

1.2.2 Informative References

None.

1.3 Microsoft Implementations

The following Microsoft Internet Explorer versions implement some portion of [W3C-PNG]:

- Internet Explorer 7
- Internet Explorer 8

- Windows Internet Explorer 9
- Windows Internet Explorer 10
- Internet Explorer 11
- Internet Explorer 11 for Windows 10
- Microsoft Edge

Each browser version may implement multiple document rendering modes. The modes vary from one to another in support of the standard. The following table lists the document modes supported by each browser version.

Browser Version	Document Modes Supported
Internet Explorer 7	Quirks mode Standards mode
Internet Explorer 8	Quirks mode IE7 mode IE8 mode
Internet Explorer 9	Quirks Mode IE7 Mode IE8 Mode IE9 Mode
Internet Explorer 10	Quirks Mode IE7 Mode IE8 Mode IE9 Mode IE10 Mode
Internet Explorer 11	Quirks Mode IE7 Mode IE8 Mode IE9 Mode IE10 Mode IE11 Mode
Internet Explorer 11 for Windows 10	Quirks Mode IE7 Mode IE8 Mode IE9 Mode IE10 Mode IE11 Mode
Microsoft Edge	EdgeHTML Mode

For each variation presented in this document there is a list of the document modes and browser versions that exhibit the behavior described by the variation. All combinations of modes and versions that are not listed conform to the specification. For example, the following list for a variation indicates that the variation exists in three document modes in all browser versions that support these modes:

Quirks Mode, IE7 Mode, and IE8 Mode (All Versions)

Note "Standards mode" in Internet Explorer 7 and "IE7 mode" in Internet Explorer 8 refer to the same document mode. "IE7 mode" is the preferred way of referring to this document mode across all versions of the browser.

1.4 Standards Support Requirements

To conform to [\[W3C-PNG\]](#) a user agent must implement all required portions of the specification. Any optional portions that have been implemented must also be implemented as described by the specification. Normative language is usually used to define both required and optional portions. (For more information, see [\[RFC2119\]](#).)

The following table lists the sections of [W3C-PNG] and whether they are considered normative or informative.

Sections	Normative/Informative
1-3	Informative
4-14	Normative
Annex A-F	Informative

1.5 Notation

The following notations are used in this document to differentiate between notes of clarification, variation from the specification, and extension points.

Notation	Explanation
C####	This identifies a clarification of ambiguity in the target specification. This includes imprecise statements, omitted information, discrepancies, and errata. This does not include data formatting clarifications.
V####	This identifies an intended point of variability in the target specification such as the use of MAY, SHOULD, or RECOMMENDED. (See [RFC2119] .) This does not include extensibility points.
E####	Because the use of extensibility points (such as optional implementation-specific data) can impair interoperability, this profile identifies such points in the target specification.

2 Standards Support Statements

This section contains all variations and clarifications for the Microsoft implementation of [\[W3C-PNG\]](#).

- Section [2.1](#) describes normative variations from the MUST requirements of the specification.
- Section [2.2](#) describes clarifications of the MAY and SHOULD requirements.
- Section [2.3](#) considers error handling aspects of the implementation.
- Section [2.4](#) considers security aspects of the implementation.

2.1 Normative Variations

The following subsections describe normative variations from the MUST requirements of [\[W3C-PNG\]](#).

2.1.1 [W3C-PNG] Section 4.2, Colour spaces

V0001:

The specification states:

```
The RGB colour space in which colour samples are situated may be specified in one of three ways:
```

- a. by an ICC profile;
- b. by specifying explicitly that the colour space is sRGB when the samples conform to this colour space;
- c. by specifying the value of gamma and the 1931 CIE x,y chromaticities of the red, green, and blue primaries used in the image and the reference white point.

All Document Modes (All Versions)

Color correction of PNG images is not supported.

2.1.2 [W3C-PNG] Section 4.6, Additional information

V0002:

The specification states:

```
Gamma and chromaticity: Gamma characteristic of the image with respect to the desired output intensity, and chromaticity characteristics of the RGB values used in the image.
```

All Document Modes (All Versions)

When the **gAMA** chunk is present, the gamma conversion to a display gamma of 2.2 is incorrectly applied; a display gamma of ~1.9 is used instead of a 2.2 display gamma.

V0003:

The specification states:

```
sRGB colour space
```

A rendering intent (as defined by the International Color Consortium) and an indication that the image samples conform to this colour space.

All Document Modes (All Versions)

The **sRGB** chunk is not supported.

2.1.3 [W3C-PNG] Section 4.7.2, Chunk types

V0004:

The specification states:

The remaining 14 chunk types are termed ancillary chunk types, which encoders may generate and decoders may interpret.

- a. Transparency information: tRNS (see 11.3.2: Transparency information).
- b. Colour space information: cHRM, gAMA, iCCP, sBIT, sRGB (see 11.3.3: Colour space information).

All Document Modes (All Versions)

gAMA chunks are the only color space information chunks that are supported. No color conversion is applied to the pixel color values that are read from the PNG file.

2.1.4 [W3C-PNG] Section 11.3.3.1, cHRM Primary chromaticities and white point

V0005:

The specification states:

11.3.3.1 cHRM Primary chromaticities and white point

All Document Modes (All Versions)

The **cHRM** chunk is not supported.

2.1.5 [W3C-PNG] Section 11.3.3.2, gAMA Image gamma

V0006:

The specification states:

For gAMA these are the reference viewing conditions of the sRGB specification [\[IEC-RGB\]](#), which are based on ISO 3664 [\[ISO-3664\]](#).

All Document Modes (All Versions)

When the **gAMA** chunk is present, the gamma conversion to a display gamma of 2.2 is incorrectly applied; a display gamma of ~1.9 is used instead of a 2.2 display gamma.

2.1.6 [W3C-PNG] Section 11.3.3.3, iCCP Embedded ICC profile

V0007:

The specification defines the **iCCP Embedded ICC** profile.

All Document Modes (All Versions)

The **iCCP** chunk is not supported.

2.1.7 [W3C-PNG] Section 11.3.3.4, sBIT Significant bits

V0008:

The specification states:

11.3.3.4 sBIT Significant bits

Each depth specified in sBIT shall be greater than zero and less than or equal to the sample depth (which is 8 for indexed-colour images, and the bit depth given in IHDR for other colour types). Note that sBIT does not provide a sample depth for the alpha channel that is implied by a tRNS chunk; in that case, all of the sample bits of the alpha channel are to be treated as significant. If the sBIT chunk is not present, then all of the sample bits of all channels are to be treated as significant.

All Document Modes (All Versions)

The **sBIT** chunk is not supported.

2.1.8 [W3C-PNG] Section 11.3.3.5, sRGB Standard RGB colour space

V0009:

The specification defines the **sRGB Standard** color space.

All Document Modes (All Versions)

The **sRGB** chunk is not supported.

2.1.9 [W3C-PNG] Section 11.3.4, Textual information

V0010:

The specification defines textual information.

All Document Modes (All Versions)

Textual information is not read from PNG files.

2.1.10 [W3C-PNG] Section 11.3.5, hIST Image histogram

V0011:

The specification defines the **hIST** image histogram.

All Document Modes (All Versions)

The **hIST** chunk is not supported.

2.1.11 [W3C-PNG] Section 11.3.5.3, pHYs Physical pixel dimensions

V0012:

The specification defines **pHYs** physical pixel dimensions.

All Document Modes (All Versions)

The **pHYs** chunk is not supported.

2.1.12 [W3C-PNG] Section 11.3.5.4, sPLT Suggested palette

V0013:

The specification defines the **sPLT** suggested palette.

All Document Modes (All Versions)

The **sPLT** chunk is not supported.

2.1.13 [W3C-PNG] Section 11.3.6, tIME Image last-modification timev

V0014:

The specification defines the **tIME** image last-modification time.

All Document Modes (All Versions)

The **tIME** chunk is not supported.

2.1.14 [W3C-PNG] Section 12, PNG Encoders

V0015:

The specification states requirements and recommendations for PNG encoder behavior.

All Document Modes (All Versions)

PNG encoding is not supported.

2.2 Clarifications

There are no clarifications of the MAY and SHOULD requirements of [\[W3C-PNG\]](#).

2.3 Error Handling

There are no additional error handling considerations.

2.4 Security

There are no additional security considerations.

3 Change Tracking

No table of changes is available. The document is either new or has had no changes since its last release.

4 Index

A

[Additional information](#) 7

C

[Change tracking](#) 11

[cHRM Primary chromaticities and white point](#) 8

[Chunk types](#) 8

[Colour spaces](#) 7

G

[gAMA Image gamma](#) 8

[Glossary](#) 4

H

[hIST Image histogram](#) 9

I

[iCCP Embedded ICC profile](#) 9

[Informative references](#) 4

[Introduction](#) 4

N

[Normative references](#) 4

P

[pHYs Physical pixel dimensions](#) 10

[PNG Encoders](#) 10

R

References

[informative](#) 4

[normative](#) 4

S

[sBIT Significant bits](#) 9

[sPLT Suggested palette](#) 10

[sRGB Standard RGB colour space](#) 9

T

[Textual information](#) 9

[tIME Image last-modification timev](#) 10

[Tracking changes](#) 11