Is JPEG XL a Possible Replacement for Existing Image Formats

By Neil Muller



After watching **ThioJoe's** video, *The New JPEG is Here*, I was keen to learn more about the **JPEG XL** image format. I currently use several of the formats discussed in the video, and JPEG XL has the potential to replace them all.

This review examines the image formats I currently use and the software I use to manage photographs and graphics. JPEG, PNG and WebP each serve different purposes, but JPEG XL (JXL) has the potential to provide a single format that could replace them all.

Initially, I investigated the claims and technical details presented in the video before conducting practical tests using two image types I use regularly. The first test involved converting a JPEG photograph taken with a smartphone, while the second used a graphic image. Each image was saved in a range of formats and quality settings, and the resulting file sizes noted and the loss of image clarity compared.

Why JPEG XL attracted my attention

Three features initially attracted me to JPEG XL:

- Better compression than JPEG at comparable image quality.
- Support for lossless compression.
- Support for transparency.

Photographs taken with my camera or smartphone are in JPEG format hence smaller file size at similar quality is an obvious advantage.

For graphics work, I use Paint.NET with PNG files because they allow transparency. Transparency is particularly important because it allows me to work with multiple layers, move text and other elements around, and make changes without affecting the underlying graphic.

I have been using WebP for approximately two years, so was surprised by the claims made in the video about this format. I was also surprised that relatively few people were familiar with it, given the considerable reduction in file size it provides. When uploading 20 or 25 photographs to a website each month, smaller files mean faster loading times and less space taken up on my host storage.

The software I use

There are four programs that form the basis of my image-processing work.

IrfanView



Irfanview is my usual starting point when viewing and working with images. I've used IrfanView since Windows 95 and have become familiar with its many features. Common tasks performed are viewing, cropping, rotating, resizing and batch processing of images.

FastStone Image Viewer



FastStone Image Viewer has proved particularly useful when preparing photographs supplied by other people for my clubs' website. One useful feature used regularly is the ability to crop photographs to a specific size, avoiding the inconvenience of dealing with numerous different image dimensions. Adjusting highlights and shadows, rotate images, sharpening are other basic editing tasks performed regularly. Both FastStone, like Irfanview before it are very capable programs with plenty of options and tools.

Paint.NET



PaintDotNet is used primarily for graphics work. It provides layers and with PNG images, transparency become very important. This makes it easy to overlay elements and move them around without disturbing other parts of the graphic.

If a mistake is made, only the affected layer needs to be changed. Although having used Paint.net for some time, I continue to discover features I had not previously realised were available. It is a very comprehensive program and an excellent image editor.

Adobe Photoshop Elements



When more serious image editing is required, I turn to Photoshop Elements. However, I'm finding that I'm using it less frequently as the other programs provide most of the facilities I need.

What JPEG XL offers

Below summarises the main advantages gleamed from the ThioJoe's video.

Feature	Potential advantage
Improved compression	Smaller files than JPEG at comparable quality
Lossless compression	Image quality is retained without degradation
Transparency	Can handle transparent areas, useful for graphics
16-bit colour	Greater colour depth
HDR support	Supports high dynamic range images
Saving regions	Allows selected image areas to be stored
Tiling	Supports dividing images into smaller sections
Open source	No royalty fees for using the format

The ability to save images without losing quality is particularly attractive. JPEG is a lossy format, meaning that repeatedly editing and saving an image as JPEG can gradually reduce its quality. A lossless format avoids this problem.

At present the support for 16-bit colour, HDR and image tiling are interesting, however these features are not particularly important to my current requirements.

Another important consideration is that JPEG XL is open source and royalty-free, compared to HEIC, which has patent and licensing considerations. I feel JPEG XL had a better chance of becoming widely adopted.

Browser and software support

Given JPEG XL has been around for some time, I was sceptical of the claim in the video that JPEG XL is new, so investigated when major web browsers had introduced JPEG XL support. I found that support was relatively recent in Chrome and Firefox, while Safari had introduced it earlier. Microsoft Edge had not yet adopted it at the time of this study, as shown in the table below.

Browsers	Version	Date JXL introduced
Firefox	158	Oct 2026
Chrome	155	Oct 2026
Edge	Not yet adopted	Not yet adopted
Safari	17	2023

I then looked at the image-editing programs I regularly used to see when and if JPEG XL was supported.

Image Editing Software	Version	Date
IrfanView	4.59	Late 2021
Paint.NET	5.1.5	March 2025
FastStone Image Viewer	8.4	May 2026
XnView MP	0.99.0	Sept 2021

Notes: Irfanview version 4.59 supports JPEG XL through a plug-in

Faststone added viewing support in 2026, but cannot yet save in JPEG XL
XnView MP supports JPEG XL and a very large range of other formats

XnView MP was included because another member uses it as his regular image viewer and regards it highly. After installing it for testing I was impressed by the number of formats it supports and its overall capabilities.

Comparing JPEG XL with other formats

The table below compares the features of compressed image formats JPEG XL, WebP and HEIC mentioned in the ThioJoe video.

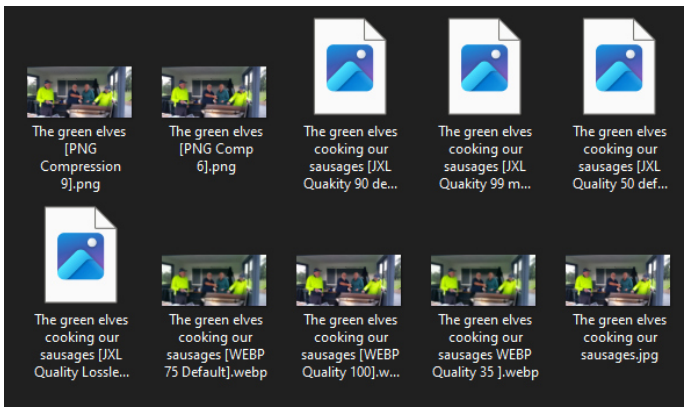
Feature	JPEG XL	WebP	HEIC / HEIF
Licensing	Royalty-free	Royalty-free	Patent / licensing restrictions
Max Resolution	1 Billion x 1 Billion + pixels	16,383 x 16,383 pixel max.	Hardware dependent
Compression	Very efficient	Very efficient	Very efficient
Lossless support	Yes	No	No
Transparency	Yes	No	No
Colour depth/ HDR	16+ bit & HDR	Up to 8-bit	16-bit HDR support
Primary target	Universal JPEG replacement	Web Delivery	Mobile camera capture

Of the 3 formats above, JPEG XL's ambition to replace JPEG is particularly significant. WebP is primarily intended for web use, while HEIC has been particularly associated with Apple devices and photography.

Installing JPEG XL on Windows

To install JPEG XL on my Windows 10 PC was to download the extension from the Microsoft Store.

Unfortunately, Windows displayed a message saying that his version of Windows did not meet the minimum requirements for the application. This was disappointing, but the limitation was not as serious as it initially appeared. The main consequence was that File Explorer could not display JPEG XL thumbnails, showing only the standard file icon instead.



JPEG XL screen icons displayed instead of thumbnail images

I found I could still open, view, convert and save JPEG XL images using my other non-Microsoft image editing programs without difficulty. As I don't use Microsoft Photos app or MS Paint, not having the JPEG XL extension installed did not appear to be a major problem.

Image testing – Comparing image compression & quality

When first testing I wanted to establish how JPEG XL compared with other formats in terms of file size and image quality.

The following two JPEG images were selected for testing.



Photo Samsung SM-G950F smart phone– "The green elves"



Miscellaneous graphic elements & text

The first was a photograph taken with a Samsung smartphone camera. It was a JPEG with a resolution of 4,032 × 1960 pixels and file size of 2.25 MB. I considered this a suitable example of the photographs I regularly receive to prepare for my clubs' website.

The second was a graphic containing text and other elements. Although its resolution was relatively small at 800 x 928 and 211KB, it proved useful for comparing how well the different formats retained fine detail and text readability.

I converted the original JPEG photograph to JPEG XL and other compressed formats as shown in the table below, using IrfanView, Paint.NET and XnView MP. FastStone Image Viewer was included in the software comparison but could view, but not yet save in JPEG XL.

<u>Photograph Test – JPEG XL compression results</u>

To evaluate JPEG XL performance, I tested four quality settings: default 90%, 50% quality, maximum quality and lossless compression.

The following table summarises the results for the original 2.25 MB photograph.

Picture – The Green Elves	Irfanview	Faststone	PaintDotNet	Xnview
Original Resolution	4032 x 1960	4032 x 1960	4032 x 1960	4032 x 1960
Original File size	2.25 MB	2.25 MB	2.25 MB	2.25 MB
Original format	JPEG	JPEG	JPEG	JPEG
JPG XL (Quality 90 *)	0.959 MB	Not Available	0.980 MB	0.960 MB
JPG XL (Quality 50)	0.182 MB	Not Available	0.178 MB	0.183 MB
JPG XL (Quality 99 max)	2.38 MB	Not Available	3.22 MB	2.38 MB
JPG XL (Lossless)	4.30 MB		4.29 MB	4.30 MB
WEBP (Quality 75 *)	0.245 MB	0.225 MB	1.51 MB	0.357 MB
WEBP (Quality 35)	0.127 MB	0.132 MB	0.155 MB	0.133 MB
WEBP (Lossless)	2.26 MB	4.51 MB	4.51 MB	4.51 MB
AVIF	Not Available	Not Available	2.58 MB	0.934 MB
HEIC	Not Available	Not Available	2.51 MB	2.49
PNG (Lossless)	Not Available	11.7 MB	Not Available	Not Available
PNG (Compression 6*)	7.52 MB	11.7 MB	8.33 MB	8.03 MB
PNG (Compression 9 max)	7.06 MB	11.7 MB	One setting only	7.38 MB
* = Default setting				

Test Observations – JPEG to JPEG XL

- The default quality setting of 90 produced files of approximately 1 MB, less than half the size of the original JPEG.
- Reducing the quality setting to 50 brought the file size down to approximately 0.2 MB, a substantial reduction from the original 2.25 MB.
- At maximum quality, the resulting files were generally similar in size to the original JPEG. Paint.NET produced a larger file of approximately 3.2 MB twice, which was a surprise.
- The lossless setting produced files of approximately 4 MB. When compared this with saving the original JPEG photograph as a PNG, which is lossless, resulted in a file of approximately 7 MB, a 3MB advantage for JPEG XL.
- This demonstrated that JPEG XL could retain the original image information while producing a considerably smaller file than PNG.
- I also experimented with HEIF and AVIF mentioned in the video. These formats were available in Paint.NET and XnView MP, but not in the versions of IrfanView and FastStone I was using.

Understanding the quality settings

- I found the default settings in the three programs tested generally produced similar results when viewed as a zoomed side by side comparison in Faststone.
- Although the programs presented their quality controls differently, a setting of around 90 appeared to provide a good balance between image quality and file size.
- Reducing the quality below the default quality setting, resulted in significant reduction to the file size with some loss of detail. However, the reduction was not always particularly noticeable.

- Other available settings such as compression, speed and progressive encoding are still to be investigated.

Saving JPEG XL images in different programs

The following lists how each of the programs tested, handled saving in JPEG XL.

IrfanView

- After opening an image, the user selects *File – Save As* and chooses JPEG XL from the available formats.
- A quality slider allows the user to select the desired setting. The default is 90, and a separate option enables lossless compression.
- I left the default speed setting at 7 and did not changed the progressive setting.

FastStone Image Viewer

- FastStone offers a selection of the common image formats, including JPEG, PNG and WebP. However, at the time of testing, it could not save images in JPEG XL.
- I expect that this would be included in a future update.

Paint.NET

- Paint.NET offers JPEG XL among its supported formats, together with AVIF and HEIC.
- When saving an image, a quality setting is provided with 90 the default setting.
- Unlike IrfanView, Paint.NET did not provide a separate lossless option in the save dialogue. Increasing the quality to 100% was not necessarily equivalent to lossless compression.

XnView MP

- XnView MP provides an extensive list of supported image formats.
- When saving as JPEG XL, an options button opens the compression settings. These include a lossless option or a quality slider, with 90 again being approximately the default.
- I was impressed by the features offered and its extensive format support.

Comparing the actual photo images

To compare the converted images side by side, FastStone Image Viewer was used.

The original photograph was compared against the JPEG XL version saved at 90% quality. As expected, I could not see any obvious difference between the two.

I then compared the original JPEG photograph with its JPEG XL versions at different quality settings. At 50% quality, the JPEG XL image was approximately 180 KB, compared with the original 2.25 MB. Even when enlarged considerably, I felt the result was surprisingly good, with relatively little visible difference.

Graphic Image comparisons

The graphic provided a more interesting test because it contained small text and fine detail. In the images below I compared the original JPEG with a JPEG XL version saved at a relatively low-quality setting of 45%.



Faststone Image Viewer – Side by side comparison

Original 800 x 928, 211KB JPEG Viewed at 300% enlargement	800 x 928, 75 KB JPEG XL (Quality 45 out of 100) Viewed at 300% enlargement

This comparison revealed some deterioration in the readability of the small text. At 300% enlargement, the text in the compressed image on the right was noticeably less clear than in the original, although the original itself lacked some detail. The fine detail in the graphic also showed a slight loss of clarity.

When the original JPEG was compared with a JPEG XL version saved at 90% quality with a file size of 176 KB, the differences were much harder to distinguish.

This illustrated the trade-off between file size and image quality. While considerable savings were possible, the results depended on the type of image and how much detail needed to be retained.

Conclusion

At present I'm not yet certain whether I would start using JPEG XL regularly, but I found the format well worth considering.

Its ability to produce substantially smaller files while maintaining good image quality is attractive, particularly for photographs. Its lossless compression and transparency support also make it a possible alternative to PNG for my graphics work.

However, widespread adoption of the format will depend on support from software developers, browser manufacturers, smartphone makers and camera manufacturers. For the moment, JPEG XL is worth keeping an eye on.

My tests demonstrated that it has considerable potential as a replacement for JPEG. However, I remain a little confused by the claim regarding the quality setting required to achieve "no loss in quality" compared to the original JPEG. The stated 20% reduction in file size for the same JPEG quality does not correspond with my results for the photographic image. Using a default quality setting of 90, produced a 50% reduction in file size with no noticeable loss of sharpness, at least to my eye.

Reference

YouTube channel: ThioJoe
Video title: **The New JPEG is Here**
YouTube URL: https://www.youtube.com/watch?v=JTzhuGvvc-ce

YouTube channel: Tech Wizdom
Video title: **This New Image Format Finally Beat JPEG | jpeg xl**
YouTube URL: https://youtu.be/Z9_eDD8_4RY?si=0rgPaP1kULGLBiKL