Jpeg2000 Reader for Adobe Lightroom 2

Introduction

This package will install a program which will modify **Adobe® Lightroom 2** (or higher) so that it is able to read **Jpeg2000** (JP2 or J2K) files. Since Lightroom 2 does not normally allow plugins which do this, it is not supported by Adobe.

Your copy of Lightroom 2 will not be changed in any way, at any time.

This has been tested with Lightroom 2.0 through 3.0, and on both 32-bit and 64-bit Windows. It is compatible with Windows XP through Windows 7.

Simply start Lightroom using this program instead of the original one, and you will be able to work with your Jpeg2000 archive immediately and in real-time. Your original images are safe, because Lightroom 2 sees them as read-only. Any meta-data changes you make are automatically stored in Lightroom's own database.

For support or more information, please go to the product website at:

http://www.jimkeir.co.uk/Lightroom .

Requirements

✔ Windows XP, Vista or 7

✔ 32-bit (x86) or 64-bit (x64)

✔ Lightroom 2.0 or higher

✔ 2Gb system RAM or better, depending on image size

How It Works

Adobe provide a way of making Lightroom work slightly differently. Unfortunately this does not extend to allowing it to read different types of files. This program works by making Lightroom think that it is reading a TIFF instead of a Jpeg2000 file. This has both benefits and drawbacks:

✔ You can read all your Jpeg2000 files directly inside Lightroom

✔ Metadata (both IPTC and XMP) is imported as well as the image itself

✔ Embedded ICC profiles are passed into Lightroom

✔ Most Lightroom features work as you'd expect

✔ You don't have to manually decompress or convert your back-catalogue

✔ You can run Lightroom unmodified simply by using it's own icon

However:

✗ Some things take longer to do because the original Jpeg2000 image must be partially or fully decompressed

✗ You will need extra memory to allow the decompression to happen

How to use it

This couldn't be simpler. Start Lightroom 2 using the new "Lightroom Jpeg2000" icon in the Start menu; Lightroom will open as normal.
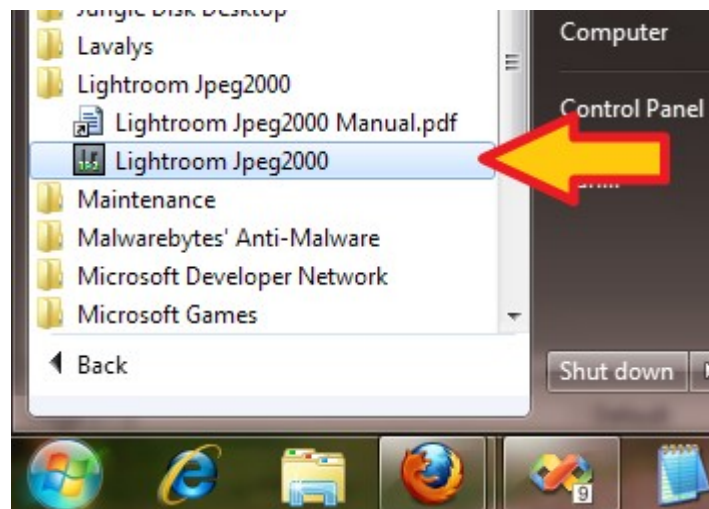
Once Lightroom is open, import a folder containing some Jpeg2000 files. As they are imported, you will see a small window appearing at the top of the Lightroom window:
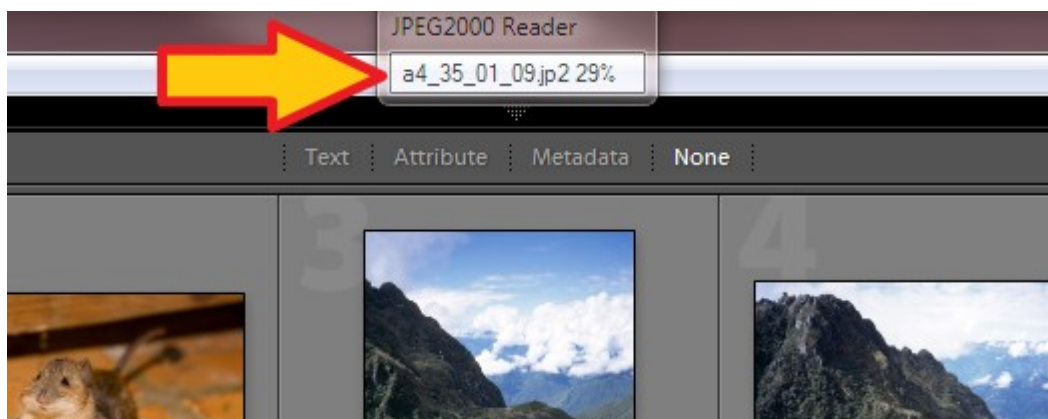
This window shows that a file is being decompressed. More than one may be decompressing at a time, in which case they will all be listed here.

There really is nothing more to it than that!

You will find that while it is reading lots of images Lightroom can be slow to respond, for example if you change to another folder. This is an unavoidable side-effect of the way the Jpeg2000 images are handled. Lightroom will often read a very small amount of information from a file, but there is no way to detect in advance when it needs only a little and when it needs much more. In many cases, at least part of the Jpeg2000 image must be decompressed even though Lightroom doesn't intend to read it. While this is happening, nothing else can happen. However, Lightroom will work as normal when it is working with individual images. This slowdown only happens when it is reading every file in a directory.

Restrictions

Some of Lightroom's features will not work as you'd expect when you work with JP2 images.

- **Renaming images works incorrectly in some cases.**

    Because the filenames that Lightroom sees are not the actual filenames as stored on disk, renaming an image using Lightroom doesn't work entirely correctly. The result is that the filenames no longer match.

    To rename a file correctly, you need to remember to add the original file extension. For example, if you have a file called "Image0001.jp2", Lightroom will see it as "Image0001_*jp2.tif*". To rename this to "India_01.jp2", you would have to tell Lightroom to rename to "India_01_*jp2.tif*".

- **Some operations take longer than expected.**

    The plugin is designed be as fast as possible, and uses multi-core or multi-threaded CPUs where available. It also tries to avoid decoding the entire image if possible. Even so, sometimes it will have to decode the whole image and this does take some time. Creating the initial thumbnails, for example, will take longer than it would for DNG or RAW images.

Demo Restrictions

Some features are limited or disabled in the demo version of the plug-in:

- Writing metadata back to JP2 files is not possible.

- Loaded images will have random noise added to them. This will typically only be visible when the image is seen at full size:
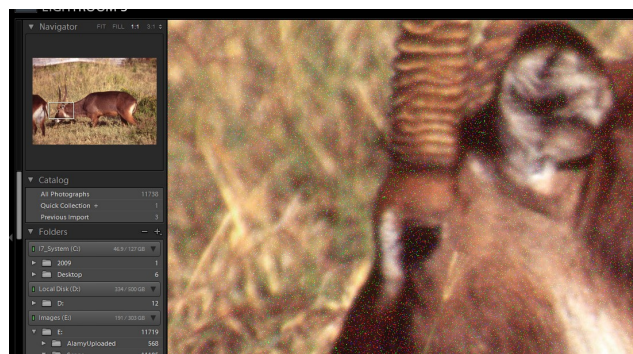
    If you upgrade to the full version, Lightroom may still have these noisy images stored as full-size previews. To clear these and see the unaltered image, select the image(s) and use the menu option "Library→Previews→Discard 1:1 Previews".

Changing Settings

The plugin is set to work as fast as it can by default. However, you might want to change things a little to suit your way of working. You can do this using the 'Settings' tool.
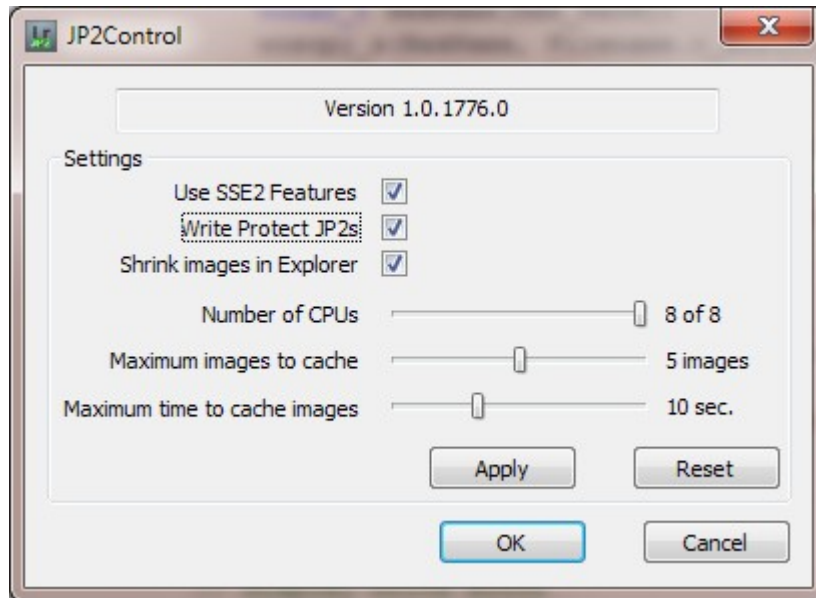
These settings control some of the advanced performance features and normally they would all be left at their default values. If you want to change things though, this is what they do:

- **Use SSE2 Features**

  Modern CPUs (that is, anything newer than a Pentium-III) provide a way of performing maths on four values at once. This makes decoding the JP2 files faster. Tick this box to allow this feature to be used.

- **Write Protect JP2s**

  This is normally switched on, meaning that Lightroom will be forbidden to write any changes back to your original files. This is simply done for safety. However, if you choose you can allow Lightroom to update the IPTC and XMP metadata in the original JP2 files by un-ticking this option.

  If you do this, the new metadata is written into the original JP2s without any changes to the actual image data. In other words, the picture itself is not recompressed so there is no loss in image quality.

- **Shrink images in Explorer**

  If you open an Explorer dialog in Lightroom, for example the 'Import Photos from Disk...' dialog, Explorer will try to read all the files it finds. Since it is only building thumbnails, it doesn't need a full-sized image. Tick this box to fool Explorer into thinking that the images are ¼ of their actual size, saving time decoding them.

  They will always be imported into Lightroom at full size.

- **Number of CPUs**

  Modern CPUs will usually have more than one core, or support

'HyperThreading' where each core can do several things at once, or both. By using as many cores as possible, you can decode images faster. How much faster will depend on how the images were saved, but usually between 30% and 85% faster per extra core you use.

- **Maximum Images to Cache**

  After an image is decoded, it is kept in memory for a short time in case Lightroom reads it again. This saves decoding it twice in a row. This setting allows you to change the number of images that can be cached.

- **Maximum Time to Cache Images**

  Images will be kept in the cache for at most this many seconds.

Technical Information

The extension will take full advantage of multi-core or hyperthreading CPUs, speeding up the loading of Jpeg2000 files considerably compared to other software. Many different images can be loading at the same time, and usually each image will be loaded by all available processing power. In other words, if you have a quad-core processor then the images will be loaded roughly four times faster than on a single-core processor.

There are some exceptions to this. Most Jpeg2000 files have the image split into small segments called tiles. It is these tiles that are loaded in parallel on different CPU cores. However, some software creates images which have only a single tile for the entire image. This will slow the loader considerably.

Frequently, Lightroom will only need to read a very small part of the image, for example if it is only checking the metadata or the image size. In this case, the loader stops work as soon as it can and will report on it's progress frequently. When an image is saved as a single tile, however, it is unable to interrupt the loading or report progress. The result will be that Lightroom may appear to stop working for several seconds, and the small status window will be shown but will be empty.

On a 64-bit PC with a 2.66GHz Core i7 CPU and 6Gb of RAM, some rough decompression times for 16-bit images are:

Size (Compressed)	Size (Decompressed)	Time
10.8Mb	165Mb (27 MP)	1 second
838Kb	40Mb (6.7 MP)	< 0.3 seconds
41Mb	210Mb (35.1 MP)	1.4 seconds
2.4Mb	120Mb (20 MP)	~0.7 seconds

In contrast, a 25 MP image with only a single tile takes around 8 seconds to load.

Writing Metadata to JP2 Files

Normally, Lightroom will be forbidden to write anything to your original JP2 files. Since Lightroom believes it is writing to a TIFF file, any changes would corrupt the original.

In the control program, there is an option to enable writing to the original files. This is normally disabled. If you enable it, Lightroom will be able to write changed metadata such as keywords and Develop module settings into the JP2 file itself.

To do this, the plugin intercepts all Lightroom's changes and, once Lightroom has finished, it tries to interpret those changes to read the new metadata. If new metadata is found, it is added to the original JP2 file, replacing any existing metadata. Currently, changes to IPTC and XMP are translated in this way.

The first time a change is written to a JP2 file, a backup of the file is made before any changes take place. This is simply called "*Original_Name*.bak", in the same directory as the original file.

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