

## Exiv2 - Feature #1199

### WebP file support

31 Jul 2016 20:36 - Ben Touchette

<b>Status:</b>	Closed	<b>Start date:</b>	31 Jul 2016
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>	Ben Touchette	<b>% Done:</b>	100%
<b>Category:</b>	image format	<b>Estimated time:</b>	50.00 hours
<b>Target version:</b>	0.26		
<b>Description</b>			
Created a patch to add support for the WebP file format. Created and tested with svn/0.25 using GIMP WebP plugin. <a href="https://github.com/draekko/gimp-webp">https://github.com/draekko/gimp-webp</a> (requires gimp 2.9.4+)			
<b>Related issues:</b>			
Related to Exiv2 - Feature #1211: Support Development of WebP		<b>Closed</b>	<b>21 Aug 2016</b>

#### Associated revisions

##### Revision 4355 - 08 Aug 2016 14:33 - Robin Mills

#1199 WebP Support (work in progress). Thank You to Ben for the patch. Thanks to Gilles for encouragement.

##### Revision 4360 - 10 Aug 2016 17:39 - Robin Mills

#1199 Thank you to Ben for the patch. This corrects various matters and adds a first stab at WebPImage::printStructure()

##### Revision 4361 - 10 Aug 2016 19:13 - Robin Mills

#1199 WebPImage::printStructure() refactored to match implementation style of other image handlers.

##### Revision 4363 - 11 Aug 2016 10:12 - Robin Mills

#1199 Patch from Ben. <http://dev.exiv2.org/issues/1199#note-37>

##### Revision 4366 - 11 Aug 2016 19:07 - Robin Mills

#1199 Fixed exiv2 -pR/-pC/-pX Stonehenge2.webp to report exif/ICC/XMP

##### Revision 4367 - 11 Aug 2016 19:47 - Ben Touchette

#1199 Fixed crash with iptc by disabling it, updated decodeChunk to do better header checks, added hexdump function.

##### Revision 4368 - 12 Aug 2016 11:46 - Ben Touchette

#1199 (as was discussed) moved WebPImage::debugPrintHex to Internal::binaryToHex

##### Revision 4369 - 13 Aug 2016 02:23 - Ben Touchette

#1199 removed warnings in stringToHex, enabled iptc support for WebPImage.

##### Revision 4371 - 13 Aug 2016 13:28 - Robin Mills

#1199 Fixing build breaker introduced by r4369

##### Revision 4372 - 13 Aug 2016 20:37 - Ben Touchette

#1199 update to binaryToHex, should remove compile warnings and fix extra space padding.

##### Revision 4373 - 13 Aug 2016 21:26 - Robin Mills

#1199 Fixing MSVC build breaker involving long/uint64\_t conflict. Minor changes to behaviour of Internal::binaryToHex()

##### Revision 4376 - 14 Aug 2016 06:37 - Robin Mills

#1199. Fixing msvc/64 build breakers (more size/long/uintXX\_t conflicts).

##### Revision 4377 - 14 Aug 2016 07:25 - Robin Mills

#1199 Adding webp tests (work in progress, more tests will be added).

**Revision 4378 - 14 Aug 2016 11:42 - Ben Touchette**

#1199 fixed handling deleting data, and adding iptc when injecting

**Revision 4384 - 15 Aug 2016 20:00 - Thomas Beutlich**

refs #1199: Fix iclude

**Revision 4397 - 17 Aug 2016 12:44 - Ben Touchette**

#1199 Updated exiv2.1 to add WEBP to format list.

**Revision 4398 - 17 Aug 2016 15:50 - Robin Mills**

#1199. Correction to r4377 (webp tests). Also fixed test output changes introduced by Thomas' changes r4379-r4396

**Revision 4399 - 17 Aug 2016 18:12 - Ben Touchette**

#1199 update .pot file to add webpimage.cpp

**Revision 4400 - 17 Aug 2016 19:58 - Robin Mills**

#1199 WebP support. Changes to test suite. See <http://dev.exiv2.org/issues/1199#note-79> for discussion.

**Revision 4402 - 17 Aug 2016 20:19 - Ben Touchette**

#1199 updated date in exiv2.1

**Revision 4403 - 18 Aug 2016 10:10 - Ben Touchette**

#1199 removed convenience conversion for iptc to xmp, apps should handle it directly since webp doesnt support iptc.

**Revision 4404 - 18 Aug 2016 10:47 - Ben Touchette**

#1199 removed exif header padding on metadata writes.

**Revision 4409 - 18 Aug 2016 20:04 - Robin Mills**

#1199 Fixing exiv2 -dC image-path to delete ICC profile.

**Revision 4411 - 19 Aug 2016 00:54 - Ben Touchette**

#1199 fixed -de -dc options, add -iC option to insert icc profiles

**Revision 4412 - 19 Aug 2016 07:08 - Robin Mills**

#1199 Adding tests for -dC -de -dx

**Revision 4413 - 19 Aug 2016 10:10 - Robin Mills**

#1199. Adding tests for -iC. Fixed bug in -pC. Test code added for -ix and -ie, however I don't think the options are working correctly.

**Revision 4414 - 19 Aug 2016 10:16 - Robin Mills**

#1199. Cosmetic corrections to r4413

**Revision 4416 - 19 Aug 2016 18:59 - Robin Mills**

#1199 Test suite changes and associate fixes to the code.

**Revision 4417 - 20 Aug 2016 00:33 - Ben Touchette**

#1199 Fixed issue with -ix, wasnt padding odd sized chunks for exif/xmp.

**Revision 4418 - 20 Aug 2016 09:43 - Robin Mills**

#1199 Fix WebP printStructure(), readMetadata() and doWriteMetadata() to handle payload padding byte. Extended webp-test to cover -iX, -ix and -ie

**Revision 4419 - 20 Aug 2016 12:42 - Ben Touchette**

#1199 minor code update, updated comments, added constants for headers, bit definitions, and misc.

**Revision 4420 - 20 Aug 2016 13:11 - Ben Touchette**

#1199 fixed typo from cut/paste in previous commit causing exif flag not to be set for VP8X chunk.

**Revision 4421 - 20 Aug 2016 14:11 - Robin Mills**

#1199 Spit'n'polish on the loops in printStructure(), metadataRead() and doWriteMetadata(). Added tests with even byte count for ICCP and XMP Chunks.

**Revision 4426 - 22 Aug 2016 20:54 - Robin Mills**

#1199 Fixing webp-test.sh. Use ~~ixx~~ to inject XMP into file without XMP>Exif/IPTC conversion

**Revision 4444 - 27 Aug 2016 17:36 - Robin Mills**

#1199 Fixing build-breaker when -DDEBUG is used.

**Revision 4575 - 27 Sep 2016 19:21 - Robin Mills**

#1199 and #1230 webpImage::printStructure(). Reporting Offset == 0 on Tiger (32bit).

**Revision 4576 - 27 Sep 2016 19:26 - Robin Mills**

#1230 and #1199 Correction to r4575

**History**

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**#1 - 01 Aug 2016 12:37 - Robin Mills**

- File *Moongirl.jpg* added
- Tracker changed from *Bug* to *Feature*
- Category set to *image format*
- Status changed from *New* to *Assigned*
- Assignee set to *Robin Mills*
- Target version set to *0.28*

Ben

I'm on vacation on a motor boat in Finland. I'll look at your patch next weekend when I get home.

WebP is scheduled to be added in v0.27. [#1048](#). I downloaded the SDK from Google about 18 months ago. I think it's fairly easy to use that to add webp support to Exiv2.

I don't have time at the moment look at your patch. If this introduces a complex build dependency on GIMP, it will not be accepted.

Moongirl.jpg

**#2 - 01 Aug 2016 13:23 - Ben Touchette**

I wasn't in a rush :)

I didn't want to add a dependency on libwebp. It has no dependencies and is self contained. I only tested it with the plug-in to make sure it worked through gexiv2 as i was working on that for said plugin at the time and from the exiv2 on the commandline.

Have a good one.

**#3 - 01 Aug 2016 13:36 - Robin Mills**

Ah, this sounds good. I'll have a look at this at the weekend. Beautiful day in the Finnish Archipelago.

**#4 - 01 Aug 2016 13:36 - Robin Mills**

- Target version changed from *0.28* to *0.26*

**#5 - 01 Aug 2016 15:35 - Ben Touchette**

Lucky, i need a year off from life just to recuperate.

As for the patch it does borrow a lot of code from the other file formats that were already in there so feel free to change anything that needs to be changed or that i got wrong. It's only important that it works and gets included eventually.

:)

**#6 - 08 Aug 2016 10:39 - Ben Touchette**

Wondering if you had the opportunity to look at the patch?

**#7 - 08 Aug 2016 11:04 - Gilles Caulier**

The patch sound well written (not tested).

I vote to integrate this patch for next release. code is not too much intrusive and easy to check. I would integrate quickly webp support in digiKam. This imply to have propers metadata R/W support...

Gilles Caulier

**#8 - 08 Aug 2016 12:32 - Robin Mills**

- % Done changed from 0 to 10

- Estimated time set to 15.00 h

I looked at the patch on Wednesday while I was in Finland. I like that you're using Basiclo to perform the I/O. In fact it's a prerequisite for any image handler to be consistent with our other image handlers. When I looked at Google's libwebp code, I concluded that it may have to be rewritten to work with Basiclo. Basiclo support is essential to exiv2 to provide support for http and other types of I/O.

To integrate your patch into libexiv2, I will have to add test files and build support for CMake/Visual Studio/Autotools. Exiv2 has two totally different file parsers *image->readMetadata()* (which have been there forever) and *image->printStructure()* which I wrote to debug image files. It's not essential, however desirable, to include *image->printStructure()* in webpimage.cpp.

I'm running late on v0.26 already. I don't have a lot to do for v0.26 (about 50 hours), however I do a life with other matters which require my time. So Gilles is entitled to his vote and I think it is desirable to include this in Exiv2 v0.26. If Gilles would like to provide the build, test and printStructure() support, he can submit the patch.

However, I know that Gilles has a family and other stuff to occupy his time in August. If you or Gilles can't do this additional work, I don't want to promise to deal with this while I still have outstanding v0.26 work to finish.

**#9 - 08 Aug 2016 12:35 - Ben Touchette**

I'll see what i can do unless Gilles beats me to it :)

**#10 - 08 Aug 2016 13:34 - Gilles Caulier**

For the build structure, Only Cmake is on my mind.

Do not ask me to support MSVC, it's a waste of time. For whole digiKam now (800.000 lines of code + all shared libs as Qt5 + KF5) we use MXE cross compiler which can provide shared/static 32/64 bits targets, including installer... If you look into MXE project, you will see that Exiv2 is already supported as well and work like a charm.

<http://mxe.cc/>

Advantages : Only one OS to compile : Linux. No need Windows + MSVC. No risk of virus. No need extra MSVC runtime... etc. To debug, all GDB based IDE work fine. The target can be linked with a MSVC client application.

But, it's another subject.

For the test code, Ben, we need Webp test images + some code to check basic operations to read/write data structures in Exif and XMP. Of course this code must check results to complete tests. You will find test code samples for other image formats in test subdir, mostly written in bash. In test/data, we host image samples. I'm sure that one script already check this kind of basic operation for other formats, so take a look and add webp support.

If this test stage pass with webp, well this will be a good point to include your patch in next Exiv2 release.

Q : how did you complete some tests currently to validate your patch ?

Gilles Caulier

**#11 - 08 Aug 2016 13:43 - Ben Touchette**

A bit more work than i thought, i'll see what i can do.

@Gilles I downloaded several images (with and without animation) and manually added the icc profile, exif and xmp data since they were all missing those. Then i ran them through the code (standalone exiv2 program and through the gimp plug-in i was working on). I'd have to create my own test images since those aren't licensed for that kind of redistribution.

@Robin whats the cut-off date (approximately) so i can figure out if i can possibly do it in time :)

**#12 - 08 Aug 2016 15:00 - Robin Mills**

- File Stonehenge.webp added

- File Stonehenge.jpg added

I've submitted your patch [r4355](#). I agree with Gilles, this looks well written.

I'm submitted the build change for CMake/Visual Studio/Autotools. I've only tested autotools on MacOS-X. I'll inspect the buildserver log files later.

It's essential to support Visual Studio. DigiKam lives in the CMake world, however "native" Visual Studio is important to other users of Exiv2.

Currently Exiv2 supports Exif, IPTC and XMP metadata. Support for ICC profiles has been added in v0.26 (although not yet complete). I think suitable test images can be created with cwebp which ships with libwebp. This isn't a comprehensive test for your code, however it's an essential starting point. Here's the progress so far:

```
1061 rmills@rmillssmbp:~/temp $ curl -O http://clanmills.com/Stonehenge.jpg ; ls -alt Stonehenge.jpg
% Total    % Received % Xferd  Average Speed   Time    Time     Time    Current
           Dload  Upload   Total   Spent    Left     Speed
100 6599k  100 6599k    0     0  1298k      0  0:00:05  0:00:05 --:--:-- 1459k
-rw-r--r--+ 1 rmills  staff  6757827  8 Aug 15:52 Stonehenge.jpg
1062 rmills@rmillssmbp:~/temp $ cwebp Stonehenge.jpg -o Stonehenge.webp
Saving file 'Stonehenge.webp'
File:      Stonehenge.jpg
Dimension: 6000 x 4000
Output:    1936490 bytes Y-U-V-All-PSNR 38.52 45.95 46.86  39.94 dB
block count:  intra4: 61816
                intra16: 31934 (-> 34.06%)
                skipped block: 15202 (16.22%)
bytes used:  header:          370 (0.0%)
                mode-partition: 302819 (15.6%)
Residuals bytes |segment 1|segment 2|segment 3|segment 4| total
macroblocks:   |    5%|    21%|    22%|    50%|  93750
quantizer:     |    36|    34 |    29 |    19 |
filter level:  |    11|    8 |    6 |    8 |
1063 rmills@rmillssmbp:~/temp $ od -a Stonehenge.webp | head -2
0000000  R  I  F  F  b  8c  gs  nul  W  E  B  P  V  P  8  sp
0000020  V  8c  gs  nul  ?  nl  9d  soh  *  p  etb  ?  si  >  9l
1064 rmills@rmillssmbp:~/temp $ exiv2 --verbose --version -g svn -g date -g time
exiv2 0.25 001900 (64 bit build)
date=Aug  8 2016
time=15:42:57
svn=4354
have_gmtime_r=1
have_timegm=1
xmlns=mediapro:http://ns.iview-multimedia.com/mediapro/1.0/
1065 rmills@rmillssmbp:~/temp $ exiv2 -pa Stonehenge.webp
1
2
1066 rmills@rmillssmbp:~/temp $
```

When we run **\$ exiv2 -pa Stonehenge.webp**, it calls `IsWebPType()` and creates the `WebPImage` instance. `WebPImage::readMetadata()` and which calls `WebPImage::decodeChunks()` is called. And there the story ends. The metadata structures have not been created. I'm sure there's not much wrong here, however I don't have time at the moment to debug this.

The output **1** and **2** are coming from output prompts I have added to `WebPImage::readMetadata()` and `WebPImage::decodeChunks()`. I didn't intend to submit those lines - you should remove them of course.

I don't know that we have a "cut off" date. When v0.26 is feature complete, the code will be tested and tweaked for release by Andreas. I'm rather busy at the moment and hoped to have Exiv2 v0.26 ready by the end of June. Having missed the June date, I am caught up in other projects such as vacation and finishing the total remodel of our home.

Here are the next steps as I see it:

- 1) I'll support the build stuff. CMake/Visual Studio/Autotools will be working by 2016-08-09 12:00 UTC. The buildserver will be building and passing this by 2016-08-10 12:00 UTC.
- 2) Can you sync/build the trunk and debug `WebPImage::decodeChunks()`

Once we have the code working, we can discuss:

- 3) Test Harness and test files
- 4) Functionality (Exif, IPTC, XMP and ICC support)
- 5) Stuff we haven't thought of yet!

**#13 - 08 Aug 2016 15:01 - Robin Mills**

- % Done changed from 10 to 20

**#14 - 08 Aug 2016 17:41 - Ben Touchette**

Lol, it's just that the 50 hours comment made it sound imminent hence my asking if there was a deadline. As for the test, weird it worked here (famous

development last words), must have omitted something by mistake when submitting. As for the rest sure, sounds like a deal. I'll get to it later today hopefully or tomorrow to see what is missing. For the ICC profiles i saw but couldn't get it working due to errors when testing it with gimp so put it aside for now and went to using the libwebp to add/remove it (for now) in the plugin and left it out for the patch.

#### #15 - 08 Aug 2016 17:44 - Ben Touchette

Also i wasn't sure about the IPTC stuff as webp doesn't support it so i have it try and copy it xmp. Hopefully thats the right way to handle that and since gimp has several bugs 2.9 witht i wasn't sure it was going into the webp file properly i need to recheck that as well with the command line app.

#### #16 - 08 Aug 2016 17:52 - Gilles Caulier

ExifTools do not show IPTC support in WebP.

But IPTC can be embeded in Exif. There is a standard tags for that. It's only recommend to do it with image format that support long chunk of byte array to host metadata. For ex, JPEG only support 64Kb for Exif, which is too small as IPTC can store 256Kb of preview image for ex.

So, this depend of WebP feature. If metadata chunk is small, forget IPTC in Exif. else you can do it in right exif tag.

But i recommend to do the same than ExifTools, to be homogeneous for the moment.

Gilles Caulier

#### #17 - 08 Aug 2016 17:56 - Robin Mills

Ben

Never underestimate what it takes to get code to work everywhere. When people say "it's done", they usually mean "it worked once on my computer". That's not "done". That is "just started". Getting it to work once on one test file is probably about 25% of the job (possibly less).

When folks (like Gilles) say "All Robin has to do is ....", notice the clever use of the words "Robin has to do it all.". The 50 hours left for v0.26 are documented here: <http://dev.exiv2.org/news/2> under "Remaining work for Robin".

My wife is fixing dinner at the moment (I'm in England) and I've started to step through your code. There's a test in decodeChunks:

```
if (equalsWebPTag(chunkId, "VP8X"))
```

The file Stonehenge.webp has the chunkId == "VP8 ". I'll have to read the WebP spec to figure out what this is about.

Let's see if we can get this building/working/passing the tests on every platform, build system, 32/64 bit static/dynamic little-endian/big-endian without ether of us having to do too much work. We can do it. Let's do it!

#### #18 - 08 Aug 2016 18:48 - Robin Mills

I think I agree with Gilles position on IPTC. I usually agree with Gilles. If IPTC is encoded in a block in WebP, it would be good to respect it. Let's not worry about IPTC yet.

Here's the plan:

- 1) I'll support the build stuff. CMake/Visual Studio/Autotools will be working by 2016-08-09 12:00 UTC. The buildserver will be building and passing this by 2016-08-10 12:00 UTC.
- 2) Can you sync/build the trunk and debug WebPImage::decodeChunks()

Once we have the code working, we can discuss:

- 3) Test Harness and test files
- 4) Functionality (Exif, IPTC, XMP and ICC support)
- 5) Stuff we haven't thought of yet!

I'm working on **Step 1**. Can you work on **Step 2**? We'll discuss IPTC in **Step 4**.

The biggest part of this project (like most projects) is probably **Step 5** - dealing with stuff we don't know anything about yet. Of course, the battle cry of managers is "*it shouldn't be like that*", or the even more stupid "*why didn't you tell me about this sooner*". For example, we'll have to update the man page exiv2.1 and we may have to modify some sample applications. There may be hidden horrors in the webp specification. libwebp/src has 43000 lines of code and exiv2/src/webpimage.cpp has 430. It's possible that we are not 100x smarter than the Googlers who wrote libwebp.

#### #19 - 09 Aug 2016 00:37 - Ben Touchette

Robin i never said it was done lol, but i get what you mean. Software is never done, smh, i know i used to do this professionally in a previous life.

There are several VP8 (that being lossy and VP8L being lossless) type chunks, VP8X is the usually the first one (right after the header "RIFFxxxxWEBP" 12bytes long) describing image size and supported features. The webp always sticks the 'ICCP' chunk right after that followed by the frame/layer/image data and ends with the rest of the metadata chunks. Odds are the stonehenge converted to webp doesn't contain copy of the metadata. I'll double check this but none of the images i found had any in them. Do a hex search for 'EXIF', 'XMP', or 'ICCP' for the chunk headers in the file. If they're in there then its a bug if not the cwebp only copies the image data. I'll be trying it here in a bit as well. Btw 'VP8' should be the data for a single image and 'ANIM' as well as 'ANMF' are the animation and frame data chunks. Webp has no IPTC chunk which was why i was

asking. Time to do a quick check of all this here before heading of the Zzz land.

Here's the direct link to the container specs [https://developers.google.com/speed/webp/docs/riff\\_container](https://developers.google.com/speed/webp/docs/riff_container)

#### #20 - 09 Aug 2016 00:42 - Ben Touchette

I opened up the stonehenge file after converting it with cwebp here and there is no metadata in it.

#### #21 - 09 Aug 2016 00:45 - Ben Touchette

- File Stonehenge.webp added

@Robin: Here is the Stonehenge.webp i exported using my gimp plugin with the patch i submitted and it works fine here. Let me know how it works out for you.

#### #22 - 09 Aug 2016 00:55 - Ben Touchette

I can always add extra display messages for when no ICCP, XMP, and EXIF chunks are found.

#### #23 - 09 Aug 2016 00:58 - Ben Touchette

Last bit before heading off, you can use webpmux to add/remove metadata in a webp file which is what i used originally when i started tinkering.

#### #24 - 09 Aug 2016 01:16 - Ben Touchette

Doh, first bug already, the stonehenge file seems to not export well with my gimp plugin though all my previous files worked. Now to see if its the export of the exiv2 patch thats the problem. Will update back tomorrow.

#### #25 - 09 Aug 2016 10:04 - Robin Mills

- File Desk2016-08-09.jpg added

Good News:

#### 1 Stonehenge.webp does not have metadata

```
570 rmills@rmillsmbp:~/gnu/webp/libwebp $ exiv2 --verbose -pa ~/Stonehenge.webp
File 1/1: /Users/rmills/Stonehenge.webp
1
2
/Users/rmills/Stonehenge.webp: No Exif data found in the file
/Users/rmills/Stonehenge.webp: No IPTC data found in the file
/Users/rmills/Stonehenge.webp: No XMP data found in the file
571 rmills@rmillsmbp:~/gnu/webp/libwebp $
```

#### 2 cwebp can preserve some metadata

```
577 rmills@rmillsmbp:~/gnu/webp/libwebp $ cwebp -metadata all ~/Stonehenge.jpg -o ~/Stonehenge.webp
Saving file '/Users/rmills/Stonehenge.webp'
File: /Users/rmills/Stonehenge.jpg
Dimension: 6000 x 4000
Output: 1936490 bytes Y-U-V-All-PSNR 38.52 45.95 46.86 39.94 dB
block count: intra4: 61816
               intra16: 31934 (-> 34.06%)
               skipped block: 15202 (16.22%)
bytes used: header: 370 (0.0%)
               mode-partition: 302819 (15.6%)
Residuals bytes |segment 1|segment 2|segment 3|segment 4| total
macroblocks: | 5%| 21%| 22%| 50%| 93750
quantizer: | 36 | 34 | 29 | 19 |
filter level: | 11 | 8 | 6 | 8 |
Metadata:
* EXIF data: 15280 bytes
* XMP data: 2579 bytes
578 rmills@rmillsmbp:~/gnu/webp/libwebp $ exiv2 -pa ~/Stonehenge.webp
1
2
Warning: Failed to decode Exif metadata.
Exif.Image.DateTime Ascii 20 2015:07:16 20:25:28
Exif.Image.ImageDescription Ascii 13 Classic View
Exif.Image.Rating Short 1 0
Iptc.Application2.RecordVersion Short 1 0
Iptc.Envelope.CharacterSet String 3 G
Iptc.Application2.Caption String 12 Classic View
```

```
Xmp.xmp.Rating XmpText 1 0
Xmp.xmp.ModifyDate XmpText 25 2015-07-16T20:25:28+01:00
Xmp.dc.description LangAlt 1 lang="x-default" Classic View
579 rmills@rmillsmbp:~/gnu/webp/libwebp $
```

### 3 CMake/Visual Studio/Autotool builds are working

<http://exiv2.dyndns.org:8080/>

### 4 I'll write WebPImage::printStructure()

I think this is a very valuable debugging tool. I hope to submit that code today.

### 5 What I'd like you to do

Perhaps we should have a discussion on Skype. I am 'clanmills'. Let's discuss your situation (location, availability, skills). We have to assemble some test files and write some test scripts. We can use the Stonehenge file, together with the libwebp utilities to generate copyright free images for the test suite. We should make the test images as small as possible to minimise the size of the svn source checkout.

We have to investigate readMetadata(). **\$ cwebp -metadata all** claimed to have written 12k bytes of Exif metadata, however there are only 3 keys being reported. There's a mysterious message **Warning: Failed to decode Exif metadata** We are also reporting IPTC metadata. The XMP data looks correct.

```
580 rmills@rmillsmbp:~/gnu/webp/libwebp $ exiv2 -pa ~/Stonehenge.webp
1
2
Warning: Failed to decode Exif metadata.
Exif.Image.DateTime Ascii 20 2015:07:16 20:25:28
Exif.Image.ImageDescription Ascii 13 Classic View
Exif.Image.Rating Short 1 0
Iptc.Application2.RecordVersion Short 1 0
Iptc.Envelope.CharacterSet String 3 G
Iptc.Application2.Caption String 12 Classic View
Xmp.xmp.Rating XmpText 1 0
Xmp.xmp.ModifyDate XmpText 25 2015-07-16T20:25:28+01:00
Xmp.dc.description LangAlt 1 lang="x-default" Classic View
581 rmills@rmillsmbp:~/gnu/webp/libwebp $ exiv2 -pa --grep Xmp ~/Stonehenge.jpg
Xmp.xmp.Rating XmpText 1 0
Xmp.xmp.ModifyDate XmpText 25 2015-07-16T20:25:28+01:00
Xmp.dc.description LangAlt 1 lang="x-default" Classic View
582 rmills@rmillsmbp:~/gnu/webp/libwebp $
```

Investigating these odd things will be much easier when WebPImage::printStructure() has been implemented.

### 6 Perfect Weather in England

Beautiful day here and the forecast for the next week is perfect. Here's the view from my desk.

Desk2016-08-09.jpg

#### #26 - 09 Aug 2016 10:09 - Robin Mills

- File Stonehenge2.webp added

- % Done changed from 20 to 30

#### #27 - 09 Aug 2016 10:32 - Gilles Caulier

Ben,

About webp features that i need to implement in digiKam image loader, outside metadata, i'm right if i said :

- 8 and 16 bits colors depth.
- lossy and loss less compression.
- ARGB or RGB support.
- ICC color profile support.

Does lossless is only in 8 bits color depth or 16 bits is supported ?

RGBA color components are stored in image as PNG for ex ?

Other color spaces are supported, as YCrCb as JPEG ?

On wikipedia, information are not clear or perhaps not up to date. I don't yet take a look into libwebp, but as i see in your gimp plugin code, it's very easy to implement.

There is any way to have a progress info while load/decoding or encoding/save the image ?

Thanks in advance

**#28 - 09 Aug 2016 11:25 - Ben Touchette**

@Gilles I haven't found enough information to properly answer you, so i'll try with what i know. As far as i can see its ARGB, ICC profiles are support (the gimp file plugin i'm working on exports it to them at any rate, lol) and lossy and lossless is support but for color depth it seems to be 8 bits only but i am not 100% sure on that part but the encoder seems to only output that. But the documentation is lacking in some areas so its hard to tell. It's RGBA only as far as i can tell, and how i implented it in the plugin.

@Robin Ha nice day, still early here on the other side of the pond :) and good to know about cwebp, honestly never used till last night lol.

I found two issues last night trying to code around them, turns out some height x width data should be in the VP8 and VP8L chunks as well and i need to reference that when no VP8X header is included to get h,w and second when no VP8X header is in the file i need to create one when adding either EXIF or XMP chunks or else the reference library (and related apps) give an error.

I never noticed it before because the exporter i was using was adding an ICC profile and was thus already creating the VP8X header. I'm poring over the webpmux code to see how i could implement that hopefully today or tomorrow worst case.

As for items 3 and 4 good to know, especially for item 3 i tried to edit the files but since i don't have those items to test with it was a shot in the dark :)

For item 5 as i said above i still have a few items to fix, once thats done i should be able to generate any combination of images as needed.

As for location i'm in Canada on the eastern side (EST time). I'll dust off my old Skype account i almost never use it now. Time for some breakfast now.

**#29 - 09 Aug 2016 11:57 - Ben Touchette**

@Robin Skype request sent.

**#30 - 09 Aug 2016 12:06 - Robin Mills**

Thanks for the update, Ben. Canada, eh? I'm an American Citizen, however I've only been in Canada at Niagara Falls. Would like to ride the train coast-to-coast one day. I'll try to get printStructure() implemented later today. Not only is that useful for debugging, I'll actually understand the WebP format when I have that done. So if you fix anything you know is broken, it will be helpful to fix it and send me a patch. After that we can tackle the test harness. If you get the files, I'll do the bash scripts.

Gilles: I can't answer your questions about ColorSpaces, depth and so on. The idea of having a progress callback for readMetadata() and writeMetadata() sounds good. I think that should be added to the Exiv2::Image class and be available for every type of Image. Can you raise a feature request on Redmine.

**#31 - 09 Aug 2016 13:15 - Ben Touchette**

VP8 Spec <https://tools.ietf.org/html/rfc6386>

VP8L Spec <https://chromium.googlesource.com/webm/libwebp/+master/doc/webp-lossless-bitstream-spec.txt>

**#32 - 09 Aug 2016 13:23 - Ben Touchette**

@Robin Yep, I noticed that when i saw you were from San Jose, from your Skype profile :) Never been there but have driven out from here to Vancouver though half on the Canadian side and half on the American side (Detroit to Seattle). Yeah a train ride across would be nice though as i understand it there's a small stretch where where this isn't any service any longer somewhere in Ontario (though i may have misunderstood what i was told at the time or it may have changed since) so you'd have to switch off and on there.

Yeah working on adding the parts i noticed were missing like having to add reading the sizes properly for when the VP8X chunk is missing. Going to work on the writing part that needs fixing later on today or tomorrow morning.

**#33 - 09 Aug 2016 15:07 - Robin Mills**

We lived in San Jose (Silicon Valley) for 14 years and retired to our 'old' house in England 2 years ago. We've totally renovated our 40 year old house. All the construction work is finished and we're into decorating. We'll be pretty well done in September or October.

We've visited all 50 of the United States and crossed the States on all three trans-continental tracks. However, we have never been in Canada or Mexico. A deliberate choice. If you take on too much, you fail. We restricted ourselves to the States. We're both US Citizens and very happy to be 'home' in England. We met in High School in Scotland. So one of our 'bucket list' projects is to cross Canada by train.

<http://clanmills.com/BucketList.shtml>

Right. I have to go with Alison to look at tiles for the kitchen, then I'll write WebPImage::printStructure(). I'm rather hoping that I can cut'n'paste your code for readMetadata() and get this done quickly. From your conversation with Gilles, I think you have a WebP parser here:

<https://github.com/draekko/gimp-webp>

**#34 - 09 Aug 2016 19:18 - Ben Touchette**

@Gilles looks like was wrong about the colorspace see <https://developers.google.com/speed/webp/docs/api> and do a search in the page for colorspace. As far as i know right now all exporters are doing rgba.

**#35 - 09 Aug 2016 20:51 - Gilles Caulier**

yes, i see. so RGBA is fine...

### #36 - 10 Aug 2016 14:29 - Ben Touchette

@Robin: hit a snag, seems like the encoder pads with extra \0 some chunks trying to figure it out and how to handle it in the writeMetadata function. Fixed the reading part to disregard those.

### #37 - 10 Aug 2016 16:17 - Ben Touchette

- File `exiv2-160810-3.diff` added

@Robin New patch update which fixes all previous issues and adds printStructure. I did find one new issue where with a lossless image with alpha but without animation the height listed in the data is way too high (eg. should be 1333 and gets 17717). Trying to figure out where it gets mangled as all other variations work fine. This patch adds/changes to whats in the repo.

### #38 - 10 Aug 2016 16:19 - Ben Touchette

Before i forget again, i get free errors with the gimp plugin when loading an image using whats in repo but when built from the stable version (0.25) it works fine.

### #39 - 10 Aug 2016 18:21 - Robin Mills

- % Done changed from 30 to 40

Thanks for providing the patch. It's submitted [r4360](#) Very good work indeed. Thank You very much.

## 1 Functionality

Here's what I see:

```
630 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS ~/Stonehenge2.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Stonehenge2.webp
  offset | chunk_type | length | data
    0 | WEBP | 12 | RIFFH...WEBP
   12 | VP8X | 10 | .....O.....
   30 | VP8 | 1936470 | .....*p...>.D.I
 1936508 | EXIF | 15280 | II*.....
 1951796 | XMP | 2579 | <?xpacket begin

631 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pa ~/Stonehenge2.webp
Warning: Failed to decode Exif metadata.
Exif.Image.DateTime          Ascii      20 2015:07:16 20:25:28
Exif.Image.ImageDescription  Ascii      13 Classic View
Exif.Image.Rating            Short       1 0
Iptc.Application2.RecordVersion Short        1 0
Iptc.Envelope.CharacterSet   String       3 G
Iptc.Application2.Caption    String      12 Classic View
Xmp.xmp.Rating               XmpText     1 0
Xmp.xmp.ModifyDate           XmpText     25 2015-07-16T20:25:28+01:00
Xmp.dc.description           LangAlt     1 lang="x-default" Classic View
632 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

The Exif data block is 15280 byte and that feels "about right" and it was 15288 in Stonehenge.jpg (which has a few additional bytes to identify it as Exif in at APP1 segment). However you're only reporting a few keys. I'm wondering if your call to `copyXmpToExif()` is clobbering something. Also, you have a warning **Warning: Failed to decode Exif metadata**. What's that about?

```
632 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS ~/Stonehenge.jpg
STRUCTURE OF JPEG FILE: /Users/rmills/Stonehenge.jpg
address | marker | length | data
  2 | 0xd8 SOI | 0
  4 | 0xe1 APP1 | 15288 | Exif..II*.....
 15294 | 0xe1 APP1 | 2610 | http://ns.adobe.com/xap/1.0/.<?x
 17906 | 0xed APP13 | 96 | Photoshop 3.0.8BIM.....'.....
 18004 | 0xe2 APP2 | 4094 | MPF.II*.....0100.....
 22100 | 0xdb DQT | 132
 22234 | 0xc0 SOF0 | 17
 22253 | 0xc4 DHT | 418
 22673 | 0xda SOS | 12
633 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

## 2 printStructure()

I was bored this afternoon and did some work on `printStructure()`. You have the right idea about what's to be done and you've implemented the `-pS` capability.

Some constructive comments about printStructure()

- a) You've used sprintf to format strings. I have Internal:: functions to perform that
- b) There are a load of Clang warnings about unsigned/signed comparisons
- c) Deal with recursion to dump the Exif data (which is a TIFF formatted structure)
- d) We should also implement the options used by
  - i) -pR/C/X (print Recursive, ICC Profile, XMP)
  - ii) -dC/E/I/X (delete ICC profile, Exif, IPTC and XMP)

So, to help you focus on the WebP matters, I'll take responsibility for printStructure() and develop it. I'll submit what I have so far which is functionally the same as you have. I've implemented -pS and just started to work on -pR.

### 3 Leaking memory

I'm not aware of that. Can you open a new issue in Redmine for that to ensure it is not forgotten.

### 4 Last night's build/test was totally successful.

Clang, GCC, Visual Studio 2005/8/10/12/13/15 (x86 & x64) was 100% successful and includes webpimage.cpp/.hpp

### 5 We can probably start working on the test suite on Friday

When we resolve the difference between the Exif metadata appearing from Stonehenge2.webp and Stonehenge.jpg we'll be ready to start working on the test suite. And while you're figuring out the mysteriously missing metadata, I'll complete WebPImage::printStructure().

### 6 Other matters

I looked at your contribution to Gimp (themes and back porting them). And you've been active on other projects. I encourage you to spend a little time on OpenHub to be sure your other projects are monitored and that your "Kudos" rating reflects your contributions. You may need to register projects such as the themes and plugin with OpenHub. It's painless and free - just a little of your time.

I'll email Andreas about granting you write access to the repos. Can't guess or promise when (or even if) he will do that.

Thanks very much for doing this work. It will be appreciated by many. Don't expect anybody to thank you - however that doesn't mean that it isn't appreciated! As a matter of fact, I really only hear from folks about bugs and issues. Being thanked is very unusual. However, I do appreciate and say **Thank You, Ben** for getting involved with this.

#### #40 - 10 Aug 2016 19:34 - Ben Touchette

1- If you get a chance maybe double check where i create the exif blob to see if did it right i may have missed something obvious. As for the actual data i was exporting from Gimp and it rewrites some data on export which i pass on to gexiv2 which gives it to exiv2 lib so its possible its also from there. As for the error message i'm not getting that on my end, all of them list fine. How was the file created?

2- Sounds good to me. You know better what you want there, i only did that to get things going and it helped me as well with those offsets because google doesn't follow their spec and pads any data payload with \0 on odd sized data chunks.

3- Not sure either but i think its the icc code which is ifdef'ed for the SVN version only. Not really high on my list just yet.

4- Sweet, good news.

5- Ok

6- Thanks for saying, and yeah i doesn't happen often enough considering the hours we pour into these apps. I will add a bit more on openhub once i figure it out and am done with this :) As for the repo well whenever it happens is good enough :)

#### #41 - 10 Aug 2016 19:57 - Robin Mills

Right. I think we're in agreement here. The ICC code could be causing a leak. It shouldn't of course, however for sure it could. I think auto pointers are a horrible idea. Never too sure who owns the pointer - grrrr.

Incidentally I think SVN is always defined. If the build doesn't know, it sets it to 0.

I really don't know anything about your plugin or gexiv2. It's a useful additional test. Let's do our work with the exiv2 sample apps because we both have them. I created Stonehenge2.webp with the cwebp:

```
681 rmills@rmillssmbp:~/temp/forBen $ curl --silent -O http://clanmills.com/Stonehenge.jpg
682 rmills@rmillssmbp:~/temp/forBen $ ls -alt Stonehenge.jpg
-rw-r--r--+ 1 rmills  staff  6757827  10 Aug 20:52 Stonehenge.jpg
683 rmills@rmillssmbp:~/temp/forBen $ cwebp -metadata all Stonehenge.jpg -o Stonehenge2.webp
Saving file 'Stonehenge2.webp'
File:      Stonehenge.jpg
Dimension: 6000 x 4000
Output:    1936490 bytes Y-U-V-All-PSNR 38.52 45.95 46.86  39.94 dB
block count:  intra4: 61816
               intra16: 31934  (-> 34.06%)
```

```

        skipped block: 15202 (16.22%)
bytes used: header:          370 (0.0%)
           mode-partition: 302819 (15.6%)
Residuals bytes |segment 1|segment 2|segment 3|segment 4| total
macroblocks:   |   5%|   21%|   22%|   50%| 93750
quantizer:     |   36|   34|   29|   19|
filter level:  |   11|    8|    6|    8|

```

Metadata:

```

* EXIF data:      15280 bytes
* XMP data:       2579 bytes
684 rmills@rmillsmbp:~/temp/forBen $ exiv2 -pS Stonehenge2.webp

```

STRUCTURE OF WEBP FILE: Stonehenge2.webp

```

Chunk | Length | Offset | Payload
-----|-----|-----|-----
RIFF  | 1954376 | 0      | WEBP
VP8X  | 10      | 12     | ....o....
VP8   | 1936470 | 30     | .....*p...>.D.I..#$(. *p...gn..d.
EXIF  | 15280   | 1936508 | II*.....
XMP   | 2579    | 1951796 | <?xpacket begin="..." id="W5M0Mp

```

```
685 rmills@rmillsmbp:~/temp/forBen $ exiv2 -pa Stonehenge2.webp
```

Warning: Failed to decode Exif metadata.

```

Exif.Image.DateTime           Ascii      20 2015:07:16 20:25:28
Exif.Image.ImageDescription   Ascii      13 Classic View
Exif.Image.Rating             Short      1 0
Iptc.Application2.RecordVersion Short      1 0
Iptc.Envelope.CharacterSet    String     3 G
Iptc.Application2.Caption     String     12 Classic View
Xmp.xmp.Rating                XmpText   1 0
Xmp.xmp.ModifyDate            XmpText   25 2015-07-16T20:25:28+01:00
Xmp.dc.description            LangAlt   1 lang="x-default" Classic View

```

```
686 rmills@rmillsmbp:~/temp/forBen $
```

#### #42 - 10 Aug 2016 20:11 - Ben Touchette

I'm starting to distrust cwebp because it fails to create lossless images as well as the error above. I think i found a work around for fetching the height by getting it from the first available frame chunk (Vp8/Vp8l/Anmf).

#### #43 - 10 Aug 2016 20:29 - Ben Touchette

We can also create proper webp files using webpmux

eg.

```

cwebp Stonehenge.jpg -o Stonehenge.webp
webpmux -set exif Stonehenge.exv Stonehenge.webp -o Stonehenge-exif.webp
webpmux -set xmp Stonehenge.xmp Stonehenge-exif.webp -o Stonehenge-exif-xmp.webp
webpmux -set icc Stonehenge.icc Stonehenge-exif-xmp.webp -o Stonehenge-exif-xmp-icc.webp

```

#### #44 - 10 Aug 2016 22:29 - Ben Touchette

- File *exiv2-height-160810.diff* added

Patch to fix listed height issue on VP8L chunks (lossless single frame/image)

#### #45 - 11 Aug 2016 10:11 - Robin Mills

- File *Stonehenge3.webp* added

Ben

I've merged your patch and made some minor changes. Please sync and review. [r4363](#)

#### 1 Stonehenge3.webp

I've tried your tricks above with cwebp and webpmux and created Stonehenge3.webp (attached). Your new code is reporting the metadata.

```

732 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pa --grep model/i ~/Stonehenge3.webp
Error: XMP Toolkit error 201: XML parsing failure
Warning: Failed to decode XMP metadata.
Exif.Image.Model              Ascii      12 NIKON D5300
733 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

A couple of grumpy warnings for you to investigate.

#### 2 Test files

I found some here. <https://github.com/drewnoakes/metadata-extractor-images/tree/master/webp>

```
742 rmills@rmillsmbp:~/gnu/exiv2/trunk $ ls -alt ~/Downloads/*.webp
-rw-r--r--@ 1 rmills  staff   19944 11 Aug 09:46 /Users/rmills/Downloads/Nikon D1X.webp
-rw-r--r--@ 1 rmills  staff   273410 11 Aug 09:45 /Users/rmills/Downloads/webpvp8.webp
-rw-r--r--@ 1 rmills  staff   474772 11 Aug 09:43 /Users/rmills/Downloads/Nikon Coolpix P7000.webp
743 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose -pa --grep model/i ~/Downloads/*.webp
File 1/3: /Users/rmills/Downloads/Nikon Coolpix P7000.webp
Warning: Failed to decode Exif metadata.
/Users/rmills/Downloads/Nikon Coolpix P7000.webp  Exif.Image.Model          Ascii          14
COOLPIX P7000
/Users/rmills/Downloads/Nikon Coolpix P7000.webp  Xmp.tiff.Model          XmpText       13
COOLPIX P7000
File 2/3: /Users/rmills/Downloads/Nikon D1X.webp
Warning: Failed to decode Exif metadata.
/Users/rmills/Downloads/Nikon D1X.webp: No Exif data found in the file
/Users/rmills/Downloads/Nikon D1X.webp: No IPTC data found in the file
/Users/rmills/Downloads/Nikon D1X.webp: No XMP data found in the file
File 3/3: /Users/rmills/Downloads/webpvp8.webp
/Users/rmills/Downloads/webpvp8.webp: No Exif data found in the file
/Users/rmills/Downloads/webpvp8.webp: No IPTC data found in the file
/Users/rmills/Downloads/webpvp8.webp: No XMP data found in the file
744 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose -pS ~/Downloads/*.webp
File 1/3: /Users/rmills/Downloads/Nikon Coolpix P7000.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon Coolpix P7000.webp
Chunk | Length | Offset | Payload
RIFF | 474764 | 0 | WEBP
VP8X | 10 | 12 | ....?....
VP8 | 410596 | 30 | p.&...*@...>.H.K..).#r..@..gn..g.
EXIF | 59965 | 410634 | II*.....
XMP | 4155 | 470608 | <?xpacket begin="..." id="W5M0Mp
File 2/3: /Users/rmills/Downloads/Nikon D1X.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon D1X.webp
Chunk | Length | Offset | Payload
RIFF | 19936 | 0 | WEBP
VP8X | 10 | 12 | ....W....
VP8 | 16128 | 30 | .c...*X...>.D.J...$.+p...g:.7..
EXIF | 3770 | 16166 | II*.....
File 3/3: /Users/rmills/Downloads/webpvp8.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/webpvp8.webp
Chunk | Length | Offset | Payload
RIFF | 273402 | 0 | WEBP
VP8 | 273390 | 12 | 0 ...*@...>U$.E#!...Q.Hp..em3..q
745 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

Our behaviour is a bit random.

### 3 webpmux is not good for creating test files

The problem is that webpmux doesn't know anything about metadata. It simply copies any data you give him into a chunk in the file.

### 4 What I'm going to do now

I'm going to focus on printStructure on the following three files.

```
749 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose -pR ~/Downloads/N*.webp ~/Stonehenge2.webp
File 1/3: /Users/rmills/Downloads/Nikon Coolpix P7000.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon Coolpix P7000.webp
Chunk | Length | Offset | Payload
RIFF | 474764 | 0 | WEBP
VP8X | 10 | 12 | ....?....
VP8 | 410596 | 30 | p.&...*@...>.H.K..).#r..@..gn..g.
EXIF | 59965 | 410634 | II*.....
STRUCTURE OF TIFF FILE (II): /Users/rmills/Downloads/Nikon Coolpix P7000.webp
dirLength = 17751
END /Users/rmills/Downloads/Nikon Coolpix P7000.webp
XMP | 4155 | 470608 | <?xpacket begin="..." id="W5M0Mp
File 2/3: /Users/rmills/Downloads/Nikon D1X.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon D1X.webp
Chunk | Length | Offset | Payload
RIFF | 19936 | 0 | WEBP
VP8X | 10 | 12 | ....W....
VP8 | 16128 | 30 | .c...*X...>.D.J...$.+p...g:.7..
EXIF | 3770 | 16166 | II*.....
```

```

STRUCTURE OF TIFF FILE (II): /Users/rmills/Downloads/Nikon D1X.webp
dirLength = 17751
END /Users/rmills/Downloads/Nikon D1X.webp
File 3/3: /Users/rmills/Stonehenge2.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Stonehenge2.webp
Chunk | Length | Offset | Payload
RIFF | 1954376 | 0 | WEBP
VP8X | 10 | 12 | ....o....
VP8 | 1936470 | 30 | .....*p...>.D.I..#$(.*p...gn..d.
EXIF | 15280 | 1936508 | II*.....
STRUCTURE OF TIFF FILE (II): /Users/rmills/Stonehenge2.webp
dirLength = 17751
END /Users/rmills/Stonehenge2.webp
XMP | 2579 | 1951796 | <?xpacket begin="..." id="W5M0Mp
750 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

## 5 Null padding blocks with odd length

I believe that's in the spec. I can't remember where I read that, however I'm confident that I read that on the libwebp web site.

### #46 - 11 Aug 2016 10:40 - Ben Touchette

- 1- The XMP chunk is filled with exif data. Probably why it fails like that ;)
- 2- Nice, when i googled originally all i got back from the search results was total crap. Will fetch them and give them the once over and see whats there.
- 3- cwebp uses the same tricks to do it. But with webpmux you can create some specific files with any data.
- 4- Sounds better, i should have done that for the header part but i had a lot of other things on my mind. Going to sync up the code here with the repo after my first coffee.
- 5- Really i only found out after a lot of time reverse engineering a bunch of files with a hexeditor, it would have saved me considerable time if i had known before hand. Google really really sucks at documenting their APIs. sigh.

### #47 - 11 Aug 2016 10:47 - Ben Touchette

Just discovered i can use svn to get a single subdirectory from any github project. In this case like so:

svn checkout <https://github.com/drewnoakes/metadata-extractor-images/trunk/webp>

Didn't know github actually support svn lol.

### #48 - 11 Aug 2016 10:52 - Ben Touchette

Only these 3 files have metadata from that repo:

```

HTC Desire.webp (exif)
Nikon Coolpix P7000.webp (exif,xmp)
Nikon D1X.webp (exif)

```

### #49 - 11 Aug 2016 11:26 - Ben Touchette

I think i figured out why the warning about decoding exif; which has to do with the test for the header. Not sure how i'll tackle it just now.

### #50 - 11 Aug 2016 19:15 - Robin Mills

- % Done changed from 40 to 50

Ah. I stumbled onto two of the three files by pure luck. -pR / -pX are working and tested. -pC is in the code and waiting for a test file. [r4366](#)

If I spend time on Exiv2 tomorrow, I will get murdered. I'll check email/Redmine/Skype. I'll try not to get sucked into anything.

```

886 rmills@rmillsmbp:~/gnu/exiv2/trunk $ ls -alt ~/Downloads/N*.webp
-rw-r--r--@ 1 rmills staff 19944 11 Aug 09:46 /Users/rmills/Downloads/Nikon D1X.webp
-rw-r--r--@ 1 rmills staff 474772 11 Aug 09:43 /Users/rmills/Downloads/Nikon Coolpix P7000.webp
887 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pR ~/Downloads/N*.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon Coolpix P7000.webp
Chunk | Length | Offset | Payload
RIFF | 474764 | 0 | WEBP
VP8X | 10 | 12 | ....?....
VP8 | 410596 | 30 | p.&...*@...>.H.K..)#r..@.gn..g.
EXIF | 59965 | 410634 | II*.....
STRUCTURE OF TIFF FILE (II): MemIo
address | tag | type | count | offset | value

```

10	0x010e	ImageDescription	ASCII	32	146	
22	0x010f	Make	ASCII	6	178	NIKON
34	0x0110	Model	ASCII	16	184	COOLPIX P7000..
46	0x0112	Orientation	SHORT	1	6	6
58	0x011a	XResolution	RATIONAL	1	200	200/0
70	0x011b	YResolution	RATIONAL	1	208	208/0
82	0x0128	ResolutionUnit	SHORT	1	2	2
94	0x0131	Software	ASCII	32	216	COOLPIX P7000V1.0

106	0x0132	DateTime	ASCII	20	248	2010:10:21 11:22:48
118	0x0213	YCbCrPositioning	SHORT	1	2	2
130	0x8769	ExifTag	LONG	1	268	268

STRUCTURE OF TIFF FILE (II): MemIo

address	tag	type	count	offset	value
270	0x829a	ExposureTime	RATIONAL	1	694   694/0
282	0x829d	FNumber	RATIONAL	1	702   702/0
294	0x8822	ExposureProgram	SHORT	1	2   2
306	0x8827	ISOSpeedRatings	SHORT	1	100   100
318	0x9000	ExifVersion	UNDEFINED	4	808596016   0220
330	0x9003	DateTimeOriginal	ASCII	20	710   2010:10:21 11:22:48
342	0x9004	DateTimeDigitized	ASCII	20	730   2010:10:21 11:22:48
354	0x9101	ComponentsConfiguration	UNDEFINED	4	197121   ...
366	0x9102	CompressedBitsPerPixel	RATIONAL	1	750   750/0
378	0x9204	ExposureBiasValue	SRATIONAL	1	758   758/0
390	0x9205	MaxApertureValue	RATIONAL	1	766   766/0
402	0x9207	MeteringMode	SHORT	1	5   5
414	0x9208	LightSource	SHORT	1	0   0
426	0x9209	Flash	SHORT	1	16   16
438	0x920a	FocalLength	RATIONAL	1	774   774/0
450	0x927c	MakerNote	UNDEFINED	4721	1040   Nikon.....II*.....+.....

STRUCTURE OF TIFF FILE (II): MemIo

address	tag	type	count	offset	value
10	0x0001	Version	UNDEFINED	4	512   ...
22	0x0002	ISOSpeed	SHORT	2	0   0 0
34	0x0003	ColorMode	ASCII	7	530   COLOR
46	0x0004	Quality	ASCII	8	538   FINE
58	0x0005	WhiteBalance	ASCII	14	546   AUTO
70	0x0006	Sharpening	ASCII	8	560   NORMAL
82	0x0007	Focus	ASCII	8	568   AF-S
94	0x0008	FlashSetting	ASCII	8	576
106	0x000a	0x000a	RATIONAL	1	584   584/0
118	0x000b	ProcessingSoftware	SSHORT	2	0   0 0
130	0x000f	ISOSelection	ASCII	8	592   AUTO
142	0x0010	DataDump	UNDEFINED	3342	600   .....1.0.....

..#b6#... ..

154	0x0011	GPSImgDirection	LONG	1	4632   4632
166	0x001a	GPSTDestDistance	ASCII	40	3942   .
178	0x0021		UNDEFINED	106	3982   .....

190	0x0022		SHORT	1	0   0
202	0x0026		SHORT	18	4088   256 0 0 0 0 ...
214	0x0027		SHORT	7	4124   256 320 240 0 0 ...
226	0x0029		SHORT	2	0   0 0
238	0x002d		SHORT	2	256   256 0
250	0x002e		SHORT	1	0   0
262	0x002f		SHORT	1	0   0
274	0x0030		SHORT	1	0   0
286	0x0080	ImageAdjustment	ASCII	14	4138   NORMAL
298	0x0081		ASCII	10	4152   NORMAL .
310	0x0082	AuxiliaryLens	ASCII	14	4162   OFF
322	0x0085	FocusDistance	RATIONAL	1	4176   4176/0
334	0x0086	DigitalZoom	RATIONAL	1	4184   4184/0
346	0x0088	AFFocusPos	UNDEFINED	4	768   ...
358	0x008f		ASCII	16	4192
370	0x0091		UNDEFINED	225	4208   ...DTVR.....

g.d..... ..

382	0x0094		SSHORT	1	0   0
394	0x0095		ASCII	6	4434   OFF
406	0x009b		BYTE	2	0   .
418	0x009c		ASCII	20	4440
430	0x009d		SHORT	1	0   0
442	0x009e		SHORT	10	4460   0 0 0 0 0 ...

```

454 | 0x00a8 | UNDEFINED | 46 | 4480 | 0104.B.....
.....
466 | 0x00aa | ASCII | 16 | 4526 | NORMAL
478 | 0x00ac | ASCII | 14 | 4542 | VR-ON
490 | 0x00b2 | ASCII | 10 | 4556 | NORMAL
502 | 0x00b3 | ASCII | 8 | 4566 |
514 | 0x00bd | UNDEFINED | 58 | 4574 | 0100STANDARD .....
.STANDARD ...
END MemIo
462 | 0x9286 UserComment | UNDEFINED | 126 | 782 | .....
...
474 | 0xa000 FlashpixVersion | UNDEFINED | 4 | 808464688 | 0100
486 | 0xa001 ColorSpace | SHORT | 1 | 1 | 1
498 | 0xa002 PixelXDimension | SHORT | 1 | 3648 | 3648
510 | 0xa003 PixelYDimension | SHORT | 1 | 2736 | 2736
522 | 0xa005 InteroperabilityTag | LONG | 1 | 1010 | 1010
534 | 0xa300 FileSource | UNDEFINED | 1 | 3 | .
546 | 0xa301 SceneType | UNDEFINED | 1 | 1 | .
558 | 0xa401 CustomRendered | SHORT | 1 | 0 | 0
570 | 0xa402 ExposureMode | SHORT | 1 | 0 | 0
582 | 0xa403 WhiteBalance | SHORT | 1 | 0 | 0
594 | 0xa404 DigitalZoomRatio | RATIONAL | 1 | 908 | 908/0
606 | 0xa405 FocalLengthIn35mmFilm | SHORT | 1 | 28 | 28
618 | 0xa406 SceneCaptureType | SHORT | 1 | 0 | 0
630 | 0xa407 GainControl | SHORT | 1 | 0 | 0
642 | 0xa408 Contrast | SHORT | 1 | 0 | 0
654 | 0xa409 Saturation | SHORT | 1 | 0 | 0
666 | 0xa40a Sharpness | SHORT | 1 | 0 | 0
678 | 0xa40c SubjectDistanceRange | SHORT | 1 | 0 | 0
END MemIo
918 | 0x0103 Compression | SHORT | 1 | 6 | 6
930 | 0x011a XResolution | RATIONAL | 1 | 994 | 994/0
942 | 0x011b YResolution | RATIONAL | 1 | 1002 | 1002/0
954 | 0x0128 ResolutionUnit | SHORT | 1 | 2 | 2
966 | 0x0201 JPEGInterchangeFormat | LONG | 1 | 8692 | 8692
978 | 0x0202 JPEGInterchangeFormatLeng | LONG | 1 | 6044 | 6044
END MemIo
XMP | 4155 | 470608 | <?xpacket begin="..." id="W5M0Mp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon D1X.webp
Chunk | Length | Offset | Payload
RIFF | 19936 | 0 | WEBP
VP8X | 10 | 12 | ....W....
VP8 | 16128 | 30 | .c...*X...>.D.J...$.+p...g:.7..
EXIF | 3770 | 16166 | II*.....
STRUCTURE OF TIFF FILE (II): MemIo
address | tag | type | count | offset | value
10 | 0x010e ImageDescription | ASCII | 32 | 170 |
...
22 | 0x010f Make | ASCII | 18 | 202 | NIKON CORPORATION
34 | 0x0110 Model | ASCII | 10 | 220 | NIKON D1X
46 | 0x011a XResolution | RATIONAL | 1 | 230 | 230/0
58 | 0x011b YResolution | RATIONAL | 1 | 238 | 238/0
70 | 0x0128 ResolutionUnit | SHORT | 1 | 2 | 2
82 | 0x0131 Software | ASCII | 10 | 246 | Ver.5.01
94 | 0x0132 DateTime | ASCII | 20 | 256 | 2003:08:06 18:04:34
106 | 0x0213 YCbCrPositioning | SHORT | 1 | 2 | 2
118 | 0x0214 ReferenceBlackWhite | RATIONAL | 6 | 276 | 0/0 1/0 255/0 1/0 128/0 ...
130 | 0x8298 Copyright | ASCII | 33 | 324 | Copyright,
...
142 | 0x8769 ExifTag | LONG | 1 | 358 | 358
STRUCTURE OF TIFF FILE (II): MemIo
address | tag | type | count | offset | value
360 | 0x829a ExposureTime | RATIONAL | 1 | 872 | 872/0
372 | 0x829d FNumber | RATIONAL | 1 | 880 | 880/0
384 | 0x8822 ExposureProgram | SHORT | 1 | 2 | 2
396 | 0x9000 ExifVersion | UNDEFINED | 4 | 808596016 | 0220
408 | 0x9003 DateTimeOriginal | ASCII | 20 | 808 | 2003:08:06 18:04:34
420 | 0x9004 DateTimeDigitized | ASCII | 20 | 828 | 2003:08:06 18:04:34
432 | 0x9101 ComponentsConfiguration | UNDEFINED | 4 | 197121 | ...
444 | 0x9204 ExposureBiasValue | SRATIONAL | 1 | 848 | 848/0
456 | 0x9205 MaxApertureValue | RATIONAL | 1 | 856 | 856/0
468 | 0x9207 MeteringMode | SHORT | 1 | 5 | 5
480 | 0x9208 LightSource | SHORT | 1 | 4 | 4
492 | 0x9209 Flash | SHORT | 1 | 7 | 7
504 | 0x920a FocalLength | RATIONAL | 1 | 864 | 864/0

```

```

516 | 0x927c MakerNote | UNDEFINED | 2787 | 888 | Nikon.....II*.....
...0200 ...
STRUCTURE OF TIFF FILE (II): MemIo
address | tag | type | count | offset | value
10 | 0x0001 Version | UNDEFINED | 4 | 808464944 | 0200
22 | 0x0002 ISOSpeed | SHORT | 2 | 13107200 | 0 200
34 | 0x0003 ColorMode | ASCII | 6 | 386 | COLOR
46 | 0x0004 Quality | ASCII | 8 | 392 | RAW
58 | 0x0005 WhiteBalance | ASCII | 13 | 400 | FLASH
70 | 0x0006 Sharpening | ASCII | 7 | 414 | NONE
82 | 0x0007 Focus | ASCII | 7 | 422 | AF-S
94 | 0x0008 FlashSetting | ASCII | 13 | 430 | NORMAL
106 | 0x0009 GPSTatus | ASCII | 9 | 444 | NEW_TTL
118 | 0x000b ProcessingSoftware | SSHORT | 1 | 0 | 0
130 | 0x000c GPSSpeedRef | RATIONAL | 4 | 454 | 15673/3582 57600/1525 2
6513/17 16960/15
142 | 0x000d GPSSpeed | UNDEFINED | 4 | 196864 | ...
154 | 0x000e GPSTrackRef | UNDEFINED | 4 | 786688 | ...
166 | 0x0011 GPSImgDirection | LONG | 1 | 2781 | 2781
178 | 0x0081 | ASCII | 7 | 486 | NORMAL
190 | 0x0083 | BYTE | 1 | 2 | .
202 | 0x0084 | RATIONAL | 4 | 494 | 17/0 1/0 35/0 1/0
214 | 0x0087 | BYTE | 1 | 3 | .
226 | 0x0088 AFFocusPos | UNDEFINED | 4 | 65537 | ...
238 | 0x0089 | BYTE | 1 | 1 | .
250 | 0x008b | UNDEFINED | 4 | 786760 | H..
262 | 0x008c | UNDEFINED | 2112 | 526 | .....
.....
274 | 0x008d | ASCII | 9 | 2638 | MODE2
286 | 0x008e | SRATIONAL | 4 | 2648 | 27885/840 57600/1525 34
979/65455 57600/1525
298 | 0x0090 | ASCII | 12 | 2680 | SPEEDLIGHT
310 | 0x0091 | UNDEFINED | 53 | 2692 | 0100....%6... ..F...
.....4 ...
322 | 0x0092 | SSHORT | 1 | 3 | 3
334 | 0x0098 | UNDEFINED | 20 | 2745 | 0100w\cH+D$$h.$$.5.Q
346 | 0x0099 | SHORT | 2 | 43386846 | 2014 662
358 | 0x009a | RATIONAL | 2 | 2765 | 59/0 10/0
370 | 0x0e10 | LONG | 1 | 2875 | 2875
END MemIo
528 | 0x9286 UserComment | UNDEFINED | 48 | 3676 | .....
.....
540 | 0x9290 SubSecTime | ASCII | 3 | 12598 | 61
552 | 0x9291 SubSecTimeOriginal | ASCII | 3 | 12598 | 61
564 | 0x9292 SubSecTimeDigitized | ASCII | 3 | 12598 | 61
576 | 0xa000 FlashpixVersion | UNDEFINED | 4 | 808464688 | 0100
588 | 0xa001 ColorSpace | SHORT | 1 | 1 | 1
600 | 0xa002 PixelXDimension | LONG | 1 | 600 | 600
612 | 0xa003 PixelYDimension | LONG | 1 | 391 | 391
624 | 0xa217 SensingMethod | SHORT | 1 | 2 | 2
636 | 0xa300 FileSource | UNDEFINED | 1 | 3 | .
648 | 0xa301 SceneType | UNDEFINED | 1 | 1 | .
660 | 0xa302 CFAPattern | UNDEFINED | 8 | 3724 | .....
672 | 0xa401 CustomRendered | SHORT | 1 | 0 | 0
684 | 0xa402 ExposureMode | SHORT | 1 | 0 | 0
696 | 0xa403 WhiteBalance | SHORT | 1 | 1 | 1
708 | 0xa404 DigitalZoomRatio | RATIONAL | 1 | 3732 | 3732/0
720 | 0xa405 FocalLengthIn35mmFilm | SHORT | 1 | 25 | 25
732 | 0xa406 SceneCaptureType | SHORT | 1 | 0 | 0
744 | 0xa407 GainControl | SHORT | 1 | 0 | 0
756 | 0xa408 Contrast | SHORT | 1 | 0 | 0
768 | 0xa409 Saturation | SHORT | 1 | 0 | 0
780 | 0xa40a Sharpness | SHORT | 1 | 1 | 1
792 | 0xa40c SubjectDistanceRange | SHORT | 1 | 0 | 0
END MemIo
154 | 0x8825 GPSTag | LONG | 1 | 3740 | 3740
END MemIo
888 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

**#51 - 11 Aug 2016 19:19 - Ben Touchette**

Gotcha and nice :)

Good luck on that other matter. I'll be updating the decodeChunk function shortly i think i have all the kinks out now. Doing one last pass before committing the code in.

## #52 - 11 Aug 2016 19:24 - Robin Mills

Never worry about making mistakes and checking in code that's not right. The whole point of our test harness is to detect that. Of course, we haven't got any tests for your stuff yet, however nobody knows it's there anyway. And we're on the trunk which is a development branch. I try to keep it stable so that it will always build and pass our test suite.

I've drawn a blank on [#1203](#). I'll deal with it in v0.27 next year. I closed [#1202](#) today and `printStructure()` is working. A good day.

## #53 - 11 Aug 2016 19:33 - Ben Touchette

Just read the for [#1203](#), yep sounds a like a good one. As for the commits i'm not too worried but i prefer to do the work to fix stuff (if possible) before shipping it :)

I cleaned up a bunch of stuff while i was in there fix it. Oh and created a hexdump function that probably should go elsewhere in the but we can discuss that in chat. Prints two 8 byte wide hex sections and the ascii dump to the right of that. I needed that instead of opening the hex editor every two seconds to get the proper info from some of the chunks. Anyways it'll be in this commit.

## #54 - 12 Aug 2016 09:38 - Robin Mills

This looks fine, Ben. A couple of suggestions:

### 1 Move the hexDump code to the Internal namespace

We'll find a good use for this elsewhere in the code. Much as I have done for `Internal::binaryToString()`. I suggest a signature such as:

```
std::string Internal::binaryToHex(const byte*, size_t);
```

### 2 I'm surprised that you can parse Stonehenge3.webp

Is this what you refer to as a "long" header? I have my doubts that `Stonehenge3.webp` is a valid file. The EXIF data in a JPEG is stored in an APP1 segment and it's a 100% valid TIFF file. I think the WebP EXIF Chunk is a valid TIFF file (although it has no image). You can extract the TIFF with the utility `dd` (dastardly dangerous). `dd` is one of the most feared tools in Linux.

```
900 rmills@rmillssmbp:~/gnu/exiv2/trunk $ exiv2 -pS ~/Stonehenge2.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Stonehenge2.webp
Chunk | Length | Offset | Payload
RIFF | 1954376 | 0 | WEBP
VP8X | 10 | 12 | ....o....
VP8 | 1936470 | 30 | .....*p...>.D.I..#$(.*p...gn..d.
EXIF | 15280 | 1936508 | II*.....
XMP | 2579 | 1951796 | <?xpacket begin="..." id="W5M0Mp
901 rmills@rmillssmbp:~/gnu/exiv2/trunk $ dd bs=1 skip=$((1936508+8)) count=15280 if=~/Stonehenge2.webp of=Stonehenge2.tiff
15280+0 records in
15280+0 records out
15280 bytes transferred in 0.055026 secs (277688 bytes/sec)
902 rmills@rmillssmbp:~/gnu/exiv2/trunk $ exiv2 -pR Stonehenge2.tiff
STRUCTURE OF TIFF FILE (II): Stonehenge2.tiff
address | tag | type | count | offset | value
10 | 0x010f | Make | ASCII | 18 | 146 | NIKON CORPORATION
22 | 0x0110 | Model | ASCII | 12 | 164 | NIKON D5300
...
4410 | 0x0213 | YCbCrPositioning | SHORT | 1 | 1 | 1
END Stonehenge2.tiff
903 rmills@rmillssmbp:~/gnu/exiv2/trunk $
```

The following command fails miserably:

```
904 rmills@rmillssmbp:~/gnu/exiv2/trunk $ exiv2 -pR ~/Stonehenge3.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Stonehenge3.webp
Chunk | Length | Offset | Payload
RIFF | 1972496 | 0 | WEBP
VP8X | 10 | 12 | ....o....
VP8 | 1936470 | 30 | .....*p...>.D.I..#$(.*p...gn..d.
EXIF | 17989 | 1936508 | ..Exiv2..;.Exif..II*.....
STRUCTURE OF TIFF FILE (??): MemIo
END MemIo
XMP | 17989 | 1954506 | ..Exiv2..;.Exif..II*.....
905 rmills@rmillssmbp:~/gnu/exiv2/trunk $
```

I could fix that of course. However I don't think I should fix it. `Stonehenge3.webp` has an embedded `.exv` file in the EXIF Chunk. I don't think that's valid use of the EXIF Chunk in WebP.

```
905 rmills@rmillssmbp:~/gnu/exiv2/trunk $ dd bs=1 skip=$((1936508+8)) count=17989 if=~/Stonehenge3.webp of=Stonehenge3.exv
17989+0 records in
```

```

17989+0 records out
17989 bytes transferred in 0.053564 secs (335841 bytes/sec)
906 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pR Stonehenge3.exv
STRUCTURE OF JPEG FILE: Stonehenge3.exv
address | marker | length | data
  2 | 0x01 | 0
  9 | 0xe1 APP1 | 15296 | Exif..II*.....
STRUCTURE OF TIFF FILE (II): MemIo
address | tag | type | count | offset | value
  10 | 0x010f Make | ASCII | 18 | 146 | NIKON CORPORATION
  22 | 0x0110 Model | ASCII | 12 | 164 | NIKON D5300
...
  4394 | 0x0201 JPEGInterchangeFormat | LONG | 1 | 4450 | 4450
  4406 | 0x0202 JPEGInterchangeFormatLeng | LONG | 1 | 10837 | 10837
  4418 | 0x0213 YCbCrPositioning | SHORT | 1 | 1 | 1
END MemIo
  15307 | 0xe1 APP1 | 2610 | http://ns.adobe.com/xap/1.0/.<?x
  17919 | 0xed APP13 | 68 | Photoshop 3.0.8BIM.....'.....
Record | DataSet | Name | Length | Data
  1 | 0 | ModelVersion | 2 | ..
  1 | 90 | CharacterSet | 3 | .%G
  2 | 0 | RecordVersion | 2 | ..
  2 | 120 | Caption | 12 | Classic View
17989 | 0xd9 EOI | 907 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

### 3 File Type Recognition

Exiv2 doesn't use the file extension to recognise a file type. It 'sniffs' inside the file. The ImageFactory has an array of fileTypes. He opens the file and calls the registered sniffer. For WebP it's isWebPType. If you say "I'm good with this", you handle it. The file extension is irrelevant.

```

907 rmills@rmillsmbp:~/gnu/exiv2/trunk $ grep isWebPType src/*.cpp
src/image.cpp: { ImageType::webp, newWebPInstance, isWebPType, amReadWrite, amNone, amReadWrite, amNone },
src/webpimage.cpp: if (!isWebPType(*io_, true)) {
src/webpimage.cpp: if (!isWebPType(*io_, true)) {
src/webpimage.cpp: bool isWebPType(BasicIo& iIo, bool /*advance*/)
908 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

### 4 I'm going to do my chores today

I've got a load of stuff to get done around the house and garden. Alison is painting. If I spend all day on the computer, she might throw it out the window. I'll be checking email and Redmine - so please ask if I can help you in some way.

I've spent about half my working life as the project leader and folks often say something like "I don't want to disturb you. You might get mad if I waste your time!". And my response is usually. "You are never disturbing me. I will get mad if I discover that your wheels are spinning and you didn't ask for help. If your wheels are spinning for more than 2 hours, I want to know about it!"

#### #55 - 12 Aug 2016 09:58 - Ben Touchette

1- indeed i'll see what i can come up with.

2- hahaha, i use dd a lot, though for some tasks i now use pv when copying data as it gives me a progress bar. As for decoding i made it so it was more resilient with various forms of data i tried since the encoder (webpmux) doesn't care whats going in there i try to validate and preformat the data before feeding it to the exif decoder. That way it has a better chance of pulling out something useful. I could just let it fail though :)

3- Not sure what you mean here, i already have isWebPType sniffing the header to make sure its valid.

4- Sounds like a good idea :) and yeah that was a tough one early in my career, sadly some places and managers don't see it that way, you should already be an all knowing robot :/ Reminds me of this video i saw onj youtube last year, reminded me of quite a few meetings i was in on ... <https://www.youtube.com/watch?v=BKorP55Aqvg>

#### #56 - 12 Aug 2016 10:27 - Robin Mills

Your WebP file sniffer is working perfectly. I was explaining how it worked and if you already knew that, well that's fine.

The webpmux bastardo. I'll have to look at him. If he's generating horrible files, we should handle them. However if the file is bad, we should reject it. Exiv2 philosophy: we report/modify/write perfect files. We don't forgive deviation from the standard - that's a very slippery slope.

The video is a hoot. I have a nightmare a couple of times every week about being back at work and being asked to do impossible things (like drawing red lines with blue ink). No matter how I try to negotiate, I cannot get the stakeholders to change the request.

The other nightmare is that when the project is done, the boss redefines the finish line with something new. For example, when I finish the new kitchen, the boss says "well, that's kind of OK, however you know that the bathroom is more important. Why has the bathroom not been done and you know it must be finished for guests arriving on Sunday! You don't know about the guests because you were so busy on the stupid kitchen that you didn't attend the meeting where we discussed the guests. Your communication skills need a lot of work."

I never miss work. I've got Exiv2 to keep my software skills alive. I love my wife and we're very happy to be working together to make our house perfect. Life is good - never been happier.

#### #57 - 12 Aug 2016 10:37 - Ben Touchette

Ah ok i did know, figured it out after looking it the other file types when i started. Was momentarily confused, i blame it on not ingesting the "Coffee" before answering :)

Wepbmux just stuffs whatever it gets told to put in there i don't think they do any validation from the quick test i've done (actually just look at what it let through for the XMP chunk in Stonehenge3.webp for another example). When i encode the exif not sure i've got it just right, though it works now, it feels off.

I used to have similar dreams after my last official job. When saw that video the first i both laughed and cringed having been in similar situations.

Yeah its good to have projects, keeps the mind active and skills sharp. I'm glad for you and that's a good thing you get along with the 'boss' so well :)

#### #58 - 13 Aug 2016 02:24 - Ben Touchette

Just enabled the iptc handling and fixed the warnings in stringToHex.

#### #59 - 13 Aug 2016 02:27 - Ben Touchette

Wondering if i should enable copying the exif data to xmp?

#### #60 - 13 Aug 2016 09:21 - Robin Mills

I think you should ask Alan about this exif/xmp stuff. If we do that for jpg and tiff, we should do it for webp.

There are a couple of features of Exiv2 that I wish had never been added to the code base: Lens Recognition and conversion functions. The reason I dislike these features is that the metadata is "cooked up" by the code and not in the file itself. Both are troublesome. Lens Recognition is probably 50% of the issues reported in Redmine. Because of my background in compilers/interpreters, I never try to guess what the code being compiled might mean. If it's a syntax violation, I signal an error and leave the human to deal with it.

#### #61 - 13 Aug 2016 10:41 - Ben Touchette

I'll double check whats done there and ask if its not clear.

Is there somewhere, or resource i could read up on lens recognition (aside from the code lol)? I know that past versions of Photoshop also had issues with one of my lenses when doing lens correction in Camera Raw. I'd have to try it with a recent version of it.

I just dislike messy warnings of any kind, i find it irritating, not that i always correct them but yeah :)

#### #62 - 13 Aug 2016 11:23 - Robin Mills

There's not much to the Lens Recognition. It's easy to understand. The manufacturer is meant to set a unique LensId in the metadata

```
938 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pa --grep LensID/i ~/Stonehenge.jpg
Exif.NikonLd3.LensIDNumber          Byte          1  Sigma 18-250mm F3.5-6.3 DC OS Macro HSM
939 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pv --grep LensID/i ~/Stonehenge.jpg
0x000c NikonLd3          LensIDNumber          Byte          1  146
940 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

There are two horrible consequences:

- 1) Every manufacturer uses a different way to store this. For Nikon, it's Exif.NikonLd3.LensIDNumber, Sony it's Exif.Sony1.LensID
- 2) Often, the same ID is used for several different lenses, so we need to inspect the other metadata to guess what lens is being used.

```
945 rmills@rmillsmbp:~/gnu/exiv2/trunk $ hex 146
146 = 0x92
946 rmills@rmillsmbp:~/gnu/exiv2/trunk $ grep 92 src/nikonmn.cpp
    TagInfo(0x0092, "HueAdjustment", N_("Hue Adjustment"), N_("Hue adjustment"), nikon3Id, makerTags, sign
edShort, -1, printValue),
{0x8C,0x40,0x2D,0x53,0x2C,0x3C,0x8E,0x06,0x01,0x00,0x00, "Nikon", "JAA792DA", "AF-S DX Zoom-Nikkor 18-55mm f/3
.5-5.6G ED"},
{0x90,0x3B,0x53,0x80,0x30,0x3C,0x92,0x0E,0x01,0x00,0x00, "Nikon", "JAA798DA", "AF-S DX VR Zoom-Nikkor 55-200mm
f/4-5.6G IF-ED"},
{0x92,0x48,0x24,0x37,0x24,0x24,0x94,0x06,0x01,0x00,0x00, "Nikon", "JAA801DA", "AF-S Zoom-Nikkor 14-24mm f/2.8G
ED"},
{0x92,0x39,0x2D,0x88,0x2C,0x40,0x4B,0x0E,0x01,0x00,0x00, "Sigma", "", "18-250mm F3.5-6.3 DC OS Macro HSM"},
947 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

The maintenance of non-unique lensIDs is very troublesome. Anybody using Exiv2 who goes and buys a nice new lens is very likely to discover that we don't know about it. They raise an issue on Redmine.

For v0.26, we have a great new feature. The user has a "config" file ~/.exiv2 which can be updated on his machine. <http://dev.exiv2.org/issues/1034>

I don't think we use those copy/convertor.cpp functions for other image types, so lets not use them in webp.

```
952 rmills@rmillsmbp:~/gnu/exiv2/trunk $ grep copyIptcToXmp src/*.cpp
src/convert.cpp: void copyIptcToXmp(const IptcData& iptcData, XmpData& xmpData, const char *iptcCharset)
src/webpimage.cpp: copyIptcToXmp(iptcData_, xmpData_);
src/xmpsidecar.cpp: copyIptcToXmp(iptcData_, xmpData_);
953 rmills@rmillsmbp:~/gnu/exiv2/trunk $ grep copyExifToXmp src/*.cpp
src/convert.cpp: void copyExifToXmp(const ExifData& exifData, XmpData& xmpData)
src/xmpsidecar.cpp: copyExifToXmp(exifData_, xmpData_);
954 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

Write, I think we're almost ready to start on the test code. I've got some stuff to do in the garden today. I can talk later on Skype (after 17:00/12:00) and explain it to you.

#### #63 - 13 Aug 2016 11:29 - Ben Touchette

Indeed, guess you'd have to inspect focal lengths as well to guesstimate it.

Sounds good, hopefully no interruptions like yesterday on my end :)

#### #64 - 13 Aug 2016 14:57 - Ben Touchette

- File *Stonehenge-with-icc.webp* added

#### #65 - 13 Aug 2016 15:12 - Gilles Caulier

Next week i will start to implement the digiKam WebP image loader based on libwebp. I will able to test your Exiv2 WebP handler in real...

#### #66 - 14 Aug 2016 14:03 - Ben Touchette

@Gilles: Sweet. So far it works with the implementation of the GIMP plugin for WebP.

#### #67 - 14 Aug 2016 14:04 - Ben Touchette

@Gilles: I forgot to add that the code is in file-webp under plugins in the gimp git repo.

#### #68 - 14 Aug 2016 22:36 - Robin Mills

- Assignee changed from Robin Mills to Ben Touchette

- % Done changed from 50 to 60

- Estimated time changed from 15.00 h to 50.00 h

Ben

I'm going to assign this issue to you because you're doing to hard work to make this happen. When the release notes for v0.26 are prepared you will rightfully be given the credit for bringing this feature to life. You've done a great job. Thanks very much. I'll continue to support you with this. I'll probably add the erase code on Monday to implement -dtgt where txt = { a , e , i , x , c }.

#### #69 - 14 Aug 2016 23:30 - Ben Touchette

@Robin: :) sounds fine, I'm glad i could help, and thanks for saying. I already tested the i,e, and x cases for deleting (-d option) that was my last patch before i spent most of the day trying to debrick the router. Fun times **cough** with serial interfaces/cables, tftp, and router innards lol. I believe it is very much muerte though :/

#### #70 - 15 Aug 2016 19:42 - Thomas Beutlich

This is just a reminder to not forget updating exiv2.1 on the new WEBP file format. Thanks!

#### #71 - 16 Aug 2016 22:18 - Gilles Caulier

digiKam 5.2.0 now support WebP image format in read write .  
Tested with current implementation from Exiv2. Sound working fine for the moment.  
<https://www.flickr.com/photos/digikam/29032567885/>

#### #72 - 16 Aug 2016 22:23 - Ben Touchette

@Gilles Nice. I'm trying to catch up on everything right now.

#### #73 - 17 Aug 2016 10:50 - Ben Touchette

@Thomas: Not sure what you there?

#### #74 - 17 Aug 2016 10:56 - Ben Touchette

lol second try.

@Thomas: Not sure what you mean there?

**#75 - 17 Aug 2016 11:39 - Thomas Beutlich**

I noticed that [source.trunk/src/exiv2.1](http://source.trunk/src/exiv2.1) contains the list of supported file formats which serves as the Wiki base. This file needs to be updated to consider new WEBP support.

**#76 - 17 Aug 2016 12:39 - Ben Touchette**

Thanks for explain, will add that.

**#77 - 17 Aug 2016 12:44 - Ben Touchette**

@Thomas done :)

**#78 - 17 Aug 2016 13:42 - Ben Touchette**

Started the process of updating the wiki to add webp information.

**#79 - 17 Aug 2016 19:57 - Robin Mills**

I don't believe the EXIF chunk in test/data/exiv2-bug1199.webp is valid. It think it should be a TIFF. I've based this believe on the EXIF in this file:

```
1199 rmills@rmillssmbp:~/gnu/exiv2/trunk $ exiv2 -pS ~/Downloads/Nikon\ D1X.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Nikon D1X.webp
Chunk | Length | Offset | Payload
RIFF | 19936 | 0 | WEBP
VP8X | 10 | 12 | .....W....
VP8 | 16128 | 30 | .c...*X...>.D.J...$.+p...g:.7..
EXIF | 3770 | 16166 | II*.....
1200 rmills@rmillssmbp:~/gnu/exiv2/trunk $
```

The data in the current file is:

```
1156 rmills@rmillssmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187536 | 0 | WEBP
VP8X | 10 | 12 | .....
ICCP | 560 | 30 | ...0ADBE...mnrRGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B!.o... .....]..
EXIF | 12050 | 172614 | ../.Exif..II*.....
XMP | 2864 | 184672 | <?xpacket begin="..." id="W5M0Mmp
```

I believe the EXIF chunk has 10 bytes which should not be there.

I've extracted the metadata, shortened the EXIF chunk and reassembled the file as follows:

```
$ cp test/data/exiv2-bug1199.webp 1199.webp
$ webpmux -get icc 1199.webp -o 1199.icc
$ webpmux -get exif 1199.webp -o 1199.exif
$ webpmux -get xmp 1199.webp -o 1199.xmp
$ dd bs=1 count=$((12050-10)) skip=10 if=1199.exif > 1199.tiff
$ webpmux -set exif 1199.tiff 1199.webp -o 1199-1.webp
$ webpmux -set icc 1199.icc 1199-1.webp -o 1199-2.webp
$ webpmux -set xmp 1199.xmp 1199-2.webp -o 1199-3.webp
$ cp 1199-3.webp test/data/exiv2-bug1199.webp
```

The modified file test/data/exiv2-bug1199.webp is now 10 bytes shorter. I've updated the test suite appropriately. I've updated the Wiki/WEBP page [http://dev.exiv2.org/projects/exiv2/wiki/The\\_Metadata\\_in\\_WEBP\\_files](http://dev.exiv2.org/projects/exiv2/wiki/The_Metadata_in_WEBP_files)

```
1200 rmills@rmillssmbp:~/gnu/exiv2/trunk $ exiv2 -pS test/data/exiv2-bug1199.webp
STRUCTURE OF WEBP FILE: test/data/exiv2-bug1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | .....
ICCP | 560 | 30 | ...0ADBE...mnrRGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B!.o... .....]..
EXIF | 12040 | 172614 | II*.....
XMP | 2864 | 184662 | <?xpacket begin="..." id="W5M0Mmp
1201 rmills@rmillssmbp:~/gnu/exiv2/trunk $
```

**#80 - 18 Aug 2016 10:29 - Ben Touchette**

You may be right i just ran cwebp with all metadata conversion on Stonehenge.jpg and it has the same format, so i guess i'll adjust accordingly.

### #81 - 18 Aug 2016 10:51 - Ben Touchette

- File Stonehenge-with-icc-exif-xmp.webp added

Changed it to remove the header padding. Should produce correct exif data now. Attaching new test image.

### #82 - 18 Aug 2016 11:10 - Robin Mills

This looks better. Comparing three files:

```
606 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS ~/Downloads/Stonehenge-with-icc.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Stonehenge-with-icc.webp
Chunk | Length | Offset | Payload
RIFF | 187536 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE...mnrtrGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B.!...o... ..]..
EXIF | 12050 | 172614 | ../.Exif..II*.....
XMP | 2864 | 184672 | <?xpacket begin="..." id="W5M0Mp
607 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS ~/Downloads/Stonehenge-with-icc-exif-xmp.webp
STRUCTURE OF WEBP FILE: /Users/rmills/Downloads/Stonehenge-with-icc-exif-xmp.webp
Chunk | Length | Offset | Payload
RIFF | 180990 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE...mnrtrGB XYZ .....
VP8 | 165706 | 598 | .....*... >1..B.! ...yX@..gn.E..
EXIF | 12068 | 166312 | II*.....
XMP | 2602 | 178388 | <?xpacket begin="..." id="W5M0Mp
608 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS test/data/exiv2-bug1199.webp
STRUCTURE OF WEBP FILE: test/data/exiv2-bug1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE...mnrtrGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B.!...o... ..]..
EXIF | 12040 | 172614 | II*.....
XMP | 2864 | 184662 | <?xpacket begin="..." id="W5M0Mp
609 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

The new file looks correctly formatted with the TIFF in the EXIF chunk. Oddly, the XMP and EXIF chunks are different. Dumping and comparing the metadata reveals:

```
609 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pa ~/Downloads/Stonehenge-with-icc-exif-xmp.webp | sort > new.txt
610 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pa test/data/exiv2-bug1199.webp | sort > test.txt
611 rmills@rmillsmbp:~/gnu/exiv2/trunk $ diff test.txt new.txt
13c13
< Exif.Image.DateTime                               Ascii          20  2016:08:13 10:54:16
---
> Exif.Image.DateTime                               Ascii          20  2016:08:18 06:50:07
168c168
< Exif.Thumbnail.JPEGInterchangeFormatLength       Long           1  6861
---
> Exif.Thumbnail.JPEGInterchangeFormatLength       Long           1  6889
171,172d170
< Iptc.Application2.Byline                          String         11  Robin Mills
< Iptc.Application2.BylineTitle                    String         10  Stonehenge
174d171
< Iptc.Application2.ObjectName                     String         10  Stonehenge
612 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

I think your new file is fine. I will not change test/data/exiv2-bug1199.webp at this time as I believe it is already working perfectly. Your new file contains slightly different metadata, however there's nothing substantially different.

I know that exiv2 -dC test/data/exiv2-bug1199.webp isn't working. I will fix that today.

### #83 - 18 Aug 2016 11:15 - Ben Touchette

The difference is probably due to my removing the iptc conversion code to/from xmp. After a fitful night, decided to remove it, apps should handle that themselves and seeing as Google didn't included iptc support in the spec at this time i guess you were right

### #84 - 18 Aug 2016 19:20 - Ben Touchette

Getting (error 32) "Setting IPTC metadata in WebP images is not supported" when doing exiv2 -i X test.webp (with file test.xml in the same directory) to insert an xml file.

## #85 - 18 Aug 2016 20:22 - Robin Mills

- % Done changed from 60 to 70

[r4409](#). I've fixed the code for exiv2 -dC image-path in WebPImage::writeMetadata(). Please review.

There a bug in -de (delete Exif). It appears to be deleting EXIF and ICCP.

The following is fine (delete ICC Profile):

```
726 rmills@rmillsmbp:~/gnu/exiv2/trunk $ cp test/data/exiv2-bug1199.webp 1199.webp
727 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE...mnrtrRGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B!..o.. .....]..
EXIF | 12040 | 172614 | II*.....
XMP | 2864 | 184662 | <?xpacket begin="..." id="W5M0Mp
728 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose -dC 1199.webp
File 1/1: 1199.webp
Erasing ICC Profile data from the file
729 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 186958 | 0 | WEBP
VP8X | 10 | 12 | .....
VP8 | 172008 | 30 | .G...*... >1..B!..o.. .....]..
EXIF | 12040 | 172046 | II*.....
XMP | 2864 | 184094 | <?xpacket begin="..." id="W5M0Mp
730 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

The following is fine (delete XMP)

```
730 rmills@rmillsmbp:~/gnu/exiv2/trunk $ cp test/data/exiv2-bug1199.webp 1199.webp
731 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE...mnrtrRGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B!..o.. .....]..
EXIF | 12040 | 172614 | II*.....
XMP | 2864 | 184662 | <?xpacket begin="..." id="W5M0Mp
732 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose -dx 1199.webp
File 1/1: 1199.webp
Erasing XMP data from the file
733 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 184094 | 0 | WEBP
VP8X | 10 | 12 | (.....
VP8 | 172008 | 30 | .G...*... >1..B!..o.. .....]..
EXIF | 12040 | 172046 | II*.....
734 rmills@rmillsmbp:~/gnu/exiv2/trunk $
```

Deleting EXIF also deletes ICC:

```
747 rmills@rmillsmbp:~/gnu/exiv2/trunk $ cp test/data/exiv2-bug1199.webp 1199.webp
748 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE...mnrtrRGB XYZ .....
VP8 | 172008 | 598 | .G...*... >1..B!..o.. .....]..
EXIF | 12040 | 172614 | II*.....
XMP | 2864 | 184662 | <?xpacket begin="..." id="W5M0Mp
749 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 --verbose -de 1199.webp
File 1/1: 1199.webp
Erasing Exif data from the file
```

```

750 rmills@rmillsmbp:~/gnu/exiv2/trunk $ exiv2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 174918 | 0 | WEBP
VP8X | 10 | 12 | $.
VP8 | 172008 | 30 | .G...*... .>1..B.!..o.. .....]..
XMP | 2864 | 172046 | <?xpacket begin="..." id="W5M0Mmp
751 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

Can you investigate this, please. If you don't fix it, I'll deal with it on Friday.

I will add tests to the test suite on Friday for -dC -dx -de

#### #86 - 18 Aug 2016 22:11 - Ben Touchette

I fixed -de and -dc will commit them in a bit.

#### #87 - 19 Aug 2016 00:55 - Ben Touchette

Committed the updates and added inserting icc profiles as well to the commit.

#### #88 - 19 Aug 2016 19:15 - Robin Mills

Ben

Right. I've submitted some fixes. [r4416](#)

Testing always seems like a good idea to me. Here's the status:

#### 1 Refactored bugfixes-test.sh into webp-test.sh

You can run "our tests" with **\$ make webp-test** and you don't to wait for the suite to grind through all the bugs

#### 2 Issues with actions.cpp/actions.hpp

I've made some changes to this. There are two options for inserting XMP -ix and -iX:

##### a) \$ exiv2 -iX foo.xxx

- this reads foo.xmp (which must be XML) and copies it into the foo.xxx

##### b) \$ exiv2 -ix foo.xxx (not working correctly, discussion below)

- this reads foo.exv and updates the XMP in foo.xxx with the XMP from foo.exv

- you can create foo.exv with **\$ exiv2 --force --verbose -ea foo.xxx**

##### c) \$ cat foo.xmp | exiv2 -ix- foo.xxx (probably not working at all)

- the reads something from stdin and puts it somewhere

- we should get this to "sniff" the data in stdin

- this is off topic. Please don't spend time on this. I'll fix this soon.

#### 3 Changes to webpimage.cpp

Have a look. Nothing major. Ask if you want me to explain any of the changes.

#### 4 Moving forward

I'm a bit lost with this. If you'd like to investigate with the debugger. Or I'll fix it tomorrow.

```

1069 rmills@rmillsmbp:~/gnu/exiv2/trunk $ cp test/data/exiv2-bug1199.webp 1199.webp ; cp test/data/Reagan.tiff
. ; exiv2 -ea --force Reagan.tiff ; mv Reagan.exv 1199.exf ; exiv2 -pS 1199.webp ; exiv2 -ix 1199.webp ; exiv
2 -pS 1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | ,.
ICCP | 560 | 30 | ...0ADBE...mnrtrRGB XYZ .....
VP8 | 172008 | 598 | .G...*... .>1..B.!..o.. .....]..
EXIF | 12040 | 172614 | II*.....
XMP | 2864 | 184662 | <?xpacket begin="..." id="W5M0Mmp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187241 | 0 | WEBP
P8X
| 738197504 | 13 | .....ICCP0.....0ADBE...mnt <--- YIKES
1070 rmills@rmillsmbp:~/gnu/exiv2/trunk $

```

### #89 - 19 Aug 2016 19:30 - Ben Touchette

1 - sweet, still need to figure that damned library issue i mentioned.

2ab - so many combinations i haven't explored yet :)

2c - does exiv2 validate xml?

4- I had that happening yesterday after your changes, the recast when writing data seemed to have been failing and basically wasn't writing anything so the offsets were wrong due to the chunk not having any data that it said it had. Probably something bad along those lines here, will give a once over.

### #90 - 19 Aug 2016 19:46 - Robin Mills

The exiv2 utility is a feature rich thing. At the moment, I don't validate XMP, and perhaps I never will. If you want to put any load of binary code into the XMP storage location, I don't see any reason to prevent you!

There's definitely something not nice happening in `WebPImage::writeMetadata()`. We'll find it. We'll fix it. No question about it.

I'm rather happy to be working on this. It's brought me back to exploring this ~~ix-ix-ix~~ calculus. For sure I want to get all that magic functioning correctly for v0.26 and properly tested in the test suite.

I'm not surprised by the time that this is taking. I wanted to defer this to v0.27 and focus on getting v0.26 out the door. We'll get this fixed **AND** we'll get v0.26 finished. However, I know that very soon I will get an email from somebody saying "why isn't v0.26 finished yet?". I might not get paid, however there are many folks using Exiv2. One of them will be urgently waiting for one of the new features in v0.26.

### #91 - 19 Aug 2016 19:52 - Ben Touchette

Indeed an intricate weave of functionality so of course there's lots of plumbing to work on lol.

I hear ya on the time-frame. People get funny about that even when it's freely given. At the time when i first submitted the patch i didn't realize that or the level of intricacy hidden behind exiv2, i figured at the time it was just going to be another quick hi/bye thanks for the code situation, i guess learned differently :)

### #92 - 19 Aug 2016 20:11 - Ben Touchette

Wish i could fix it. Seems to work on my end :

```
cp test/data/exiv2-bug1199.webp 1199.webp ; cp test/data/Reagan.tiff . ; exiv2 -ea --force Reagan.tiff ; mv Reagan.exv 1199.exf ; exiv2 -pS 1199.webp ; exiv2 -ix 1199.webp ; exiv2 -pS 1199.webp
```

STRUCTURE OF WEBP FILE: 1199.webp

Chunk	Length	Offset	Payload
RIFF	187526	0	WEBP
VP8X	10	12	,.....
ICCP	560	30	...0ADBE...mnrRGB XYZ .....
VP8	172008	598	.G...*.>1..B.!..o.. .....
EXIF	12040	172614	II*.....
XMP	2864	184662	<?xpacket begin="..." id="W5M0Mp

./1199.exv: Failed to open the file

STRUCTURE OF WEBP FILE: 1199.webp

Chunk	Length	Offset	Payload
RIFF	187526	0	WEBP
VP8X	10	12	,.....
ICCP	560	30	...0ADBE...mnrRGB XYZ .....
VP8	172008	598	.G...*.>1..B.!..o.. .....
EXIF	12040	172614	II*.....
XMP	2864	184662	<?xpacket begin="..." id="W5M0Mp

i did an svn update, let me do a clean checkout and try again.

### #93 - 19 Aug 2016 20:13 - Ben Touchette

Oops

```
cp test/data/exiv2-bug1199.webp 1199.webp ; cp test/data/Reagan.tiff . ; exiv2 -ea --force Reagan.tiff ; mv Reagan.exv 1199.exf ; exiv2 -pS 1199.webp ; exiv2 -ix 1199.webp ; exiv2 -pS 1199.webp
```

STRUCTURE OF WEBP FILE: 1199.webp

Chunk	Length	Offset	Payload
RIFF	187526	0	WEBP
VP8X	10	12	,.....
ICCP	560	30	...0ADBE...mnrRGB XYZ .....
VP8	172008	598	.G...*.>1..B.!..o.. .....
EXIF	12040	172614	II*.....
XMP	2864	184662	<?xpacket begin="..." id="W5M0Mp

./1199.exv: Failed to open the file

STRUCTURE OF WEBP FILE: 1199.webp

Chunk	Length	Offset	Payload
RIFF	187526	0	WEBP
VP8X	10	12	,.....

ICCP	560	30	...0ADBE....mnrRGB XYZ .....
VP8	172008	598	.G...*... .>1..B!..o.. .....
EXIF	12040	172614	II*.....
XMP	2864	184662	<?xpacket begin="..." id="W5M0Mp

**#94 - 19 Aug 2016 21:43 - Ben Touchette**

Ok now able to reproduce it, there was a typo in the command stack up there :)

**#95 - 20 Aug 2016 00:34 - Ben Touchette**

Fixed #4, turns out there was no padding for odd sized chunks for the exif and xmp data. Added a check and output the extra padding character needed for those cases.

**#96 - 20 Aug 2016 00:38 - Ben Touchette**

It also still breaks on -iX when i tried:

```
rm *.webp *.tiff *.exv *.xmp *.icc ; cp test/data/exiv2-bug1199.webp 1199.webp ; cp test/data/Reagan.tiff . ;
exiv2 -eX --force Reagan.tiff ; mv Reagan.xmp 1199.xmp ; exiv2 -pS 1199.webp ; exiv2 -iX 1199.webp ; exiv2 -pS
1199.webp
STRUCTURE OF WEBP FILE: 1199.webp
Chunk | Length | Offset | Payload
RIFF | 187526 | 0 | WEBP
VP8X | 10 | 12 | ,.....
ICCP | 560 | 30 | ...0ADBE....mnrRGB XYZ .....

```

**#97 - 20 Aug 2016 00:48 - Ben Touchette**

The size is wrong in the RIFF header vs actual file size. Will investigate further in the morning

**#98 - 20 Aug 2016 10:11 - Robin Mills**

Loads of changes to deal with the padding byte. Please review: [r4418](#)

Comments:

**1 TAG\_SIZE**

I've moved TAG\_SIZE to include/exiv2/webpimage.hpp and initialised it in WebPImage::WebPImage(). Can you have a look at all those 4s in the code.

**2 Height/Width**

I'm puzzled by the code for decoding height and width. There are 4's and 7's in the code. 3 byte littleEndians or something. Can you put a comment in the code about this. Perhaps you should say something about it in the Wiki: [http://dev.exiv2.org/projects/exiv2/wiki/The\\_Metadata\\_in\\_WEBP\\_files](http://dev.exiv2.org/projects/exiv2/wiki/The_Metadata_in_WEBP_files)

**3 Symbols for Bits in the header**

I see there's some bit twiddling going on. I think you're setting flags to say "I've got an ICCP" or something like that. Can you give those values symbolic names using an enum in include/exiv2/webpimage.hpp.

**4 Gotta be just about there now**

- a) Can you go over the code again, please. I suspect we can remove about 200 lines by refactoring repeated code into functions. For example when we write XMP and EXIF near line 365.
- b) I'm also bothered about testing io\_>eof() and io->size(). I'd like to see us navigate the file using file size from the RIFF header.
- c) I personally never use 'break' except in switch/case. 'break' is a goto kind of thing.

**5 What I'm going to do**

- a) Something broke yesterday in test/conversions.sh Groan. I'll investigate.

b) I think I have Gilles' multithreading issue off my back [#1207](#)

c) I'll deal with stdin/stdout such as **-iX-** and the like. It's related to this, however it's a different matter.

**#99 - 20 Aug 2016 10:19 - Ben Touchette**

- 1- noticed no problemo
- 2- I have to decode it from the chunks available and reinsert when creating a new VP8X chunk, unavoidable
- 3- Yes i can do
- 4a- I can double check
- 4b- No it needs to be done because we need the new size from the actual data we write back.
- 4c- Yeah to break out of a while loop you need to break;

I noticed you removed a critical check at the end of the chunk reading code in writeMetaData and was in there because we need read and account for the damned padding character. Now it will break again on odd size chunks by not account for that byte.

**#100 - 20 Aug 2016 10:31 - Ben Touchette**

nevermind i saw what you did further up in the code.

**#101 - 20 Aug 2016 10:37 - Ben Touchette**

For the width & heights unfortunately they encode it into 28 bits of 32bit field so there's lots of bit shifting to get the actual sizes.

**#102 - 20 Aug 2016 13:12 - Ben Touchette**

Updated, fixed and commented, all the tests run 100%.

**#103 - 20 Aug 2016 14:17 - Robin Mills**

Some polishing - [r4421](#). Please review. Apologies if I've accidentally broken your code.

I think we're now "done" on this. I believe we've successfully carried out our plan above: <http://dev.exiv2.org/issues/1199#note-12>

The code is beautiful. I'm very pleased indeed with what has been done. I'm sure we'll discover something in the weeks and months ahead. Thank You very much indeed. I'm going OpenHub to give you Kudos for a great job.

**#104 - 20 Aug 2016 14:17 - Robin Mills**

- % Done changed from 70 to 80

**#105 - 20 Aug 2016 14:31 - Ben Touchette**

w00t :) i think a beer might be in order here :)

**#106 - 25 Aug 2016 16:53 - Robin Mills**

- Status changed from Assigned to Closed

- % Done changed from 80 to 100

Thanks very much for working on this, Ben. I has been a pleasure to work with you. I'm going to mark this "closed" as we head into feature complete on v0.26.

**Files**

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exiv2.patch	20.4 KB	31 Jul 2016	Ben Touchette
Moongirl.jpg	69.8 KB	01 Aug 2016	Robin Mills
Stonehenge.webp	1.85 MB	08 Aug 2016	Robin Mills
Stonehenge.jpg	6.45 MB	08 Aug 2016	Robin Mills
Stonehenge.webp	3.64 MB	09 Aug 2016	Ben Touchette
Desk2016-08-09.jpg	57.7 KB	09 Aug 2016	Robin Mills
Stonehenge2.webp	1.86 MB	09 Aug 2016	Robin Mills
exiv2-160810-3.diff	19.2 KB	10 Aug 2016	Ben Touchette
exiv2-height-160810.diff	10.7 KB	10 Aug 2016	Ben Touchette
Stonehenge3.webp	1.88 MB	11 Aug 2016	Robin Mills
Stonehenge-with-icc.webp	183 KB	13 Aug 2016	Ben Touchette
Stonehenge-with-icc-exif-xmp.webp	177 KB	18 Aug 2016	Ben Touchette