
Subject: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Thu, 03 Feb 2005 17:03:44 GMT

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I often make false colour maps of data in IDL and export as EPS graphics which I used to import into FrameMaker documents. I have recently migrated from Solaris to Mac OS X and plan to use Pages and Keynote (I know, Pages is not a FrameMaker replacement, but that another story.) Anyway, there is an irritating quirk in the way Mac OS X displays the PDFs created from EPS files - the image embedded in the graphic (say, a 20 by 20 array) is displayed upsampled and horribly blurred. This is the case in Preview and Keynote, but not Acrobat 7 which shows it nice and crisp. Keynote shows the PDF image blurred in editing and as a slide-show, but it does export a sharp PDF. Whilst this is workable, it does mean not using the native Keynote slide-show mode.

This is evidently a Mac OS X quirk, rather than anything to do with IDL. However, despite some searching, I can't find any mention of it any of the Apple lists etc. Furthermore, it may be something that only occurs with arrays (i.e. images) embedded in EPS files - something IDL users are likely to produce, which is why I've posted here.

Any ideas?

-John Mardaljevic

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Fri, 04 Feb 2005 15:36:57 GMT

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Ben,

The code is not the problem; it's an OSX quirk. Image smoothing seems to be built-in to Aqua.

There's nothing wrong with the PDFs produced by OSX apps (other than being a bit bloated compared to Adobe distilled PDFs). In fact, in this example screen grab:

<http://www.iesd.dmu.ac.uk/~jm/pickup/grab.gif>

the EPS was converted to PDF using the Preview application - which shows it here mushy.

The false colour map (byte-scaled array) is displayed (written to the Postscript device) using TV just like any other image. It just happens to have small

pixel dimensions.

The mushy lower image is what the PDF looks like in Keynote also. The upper is how it should look (displayed here in Acrobat). Frustratingly, if you hold down the mouse whilst resizing in Keynote the image looks OK... until you let go of the mouse button and the smoothing mashes up the image again. PDFs created by Keynote are fine (just as they are with Preview). But it rules out using native Keynote for a presentation - which is a pity (unless I can turn the smoothing off).

Niggles aside, the transition from Solaris to OSX has been a joy. The only application I miss having is Framemaker.

Regards,

-John Mardaljevic

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Edd Edmondson](#) on Mon, 07 Feb 2005 13:17:57 GMT
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jm@dmu.ac.uk wrote:

- > Ben,
- > The code is not the problem; it's an OSX quirk. Image smoothing seems
- > to be built-in to Aqua.
- > There's nothing wrong with the PDFs produced by OSX apps (other than
- > being a bit bloated
- > compared to Adobe distilled PDFs). In fact, in this example screen
- > grab:

Yeah, I can see what you mean. Have you tried exporting to a high resolution bitmap?

Obviously you lose some quality by doing so (eg in any vector-based stuff like text), but if you're using it only for a presentation then you can pick an appropriate resolution for it.

Not an ideal solution but it should be workable.

--
Edd

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Mon, 07 Feb 2005 14:05:17 GMT

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That would be a last resort. I'd hope that maybe there will some option introduced at a later date (Tiger?).

As Acrobat displays it fine, I guess it's "hard-wired" into applications at present. Adobe seem to have diverged a little from Apple's default imaging model - if so, I can see why.

Here's the original PDF if anyone wants to try out any ideas - view it in both Acrobat and any of Preview/Keynote/Pages:

http://www.iesd.dmu.ac.uk/~jm/pickup/lum_int093_92_12h00.pdf

I don't think it's anything to do with how the PDF was created. It's 'simply' Aqua is trying to be helpful: "Here is a graphic comprised of only a few tens of image (i.e. scalable postscript) pixels shown using tens of thousands of (LCD) display pixels - I will smooth it out to look *nicer*".

-John

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Norbert Hahn](#) on Mon, 07 Feb 2005 16:17:03 GMT

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jm@dmu.ac.uk wrote:

> The false colour map (byte-scaled array) is displayed (written to the
> Postscript device)
> using TV just like any other image. It just happens to have small
> pixel dimensions.

Maybe your program mis-interprets some PostScript elements, such as pixmaps? If I understand PS correctly there is no such thing as a pixel on the input side of PS. A bitmap fed into PS is an area which has to be filled with scalable rectangles. When printing the PS engine (of course) has to translate the rectangles into device pixels, and it might apply some low pass filtering to avoid moiree.

Maybe the PS generator of IDL did something to fool your program.

I used the following program for a check:

```
IDL> set_plot, "PS"  
IDL> tvscl, dist(20,30), xsize=5, ysize=5, /inch  
% Compiled module: DIST.  
IDL> exit
```

That resulted in PS code that looks like (the comment lines are my interpretation):

```
%% Setup scaling 72/2540 as needed for a device with 2450 DPI res.  
$IDL_DICT begin 54 360 translate 0.0283465 dup scale  
  
%% Scale a 20x30 bitmap to 5x5 inch ( 12700 pixel on output)  
12699 12699 scale 20 30 4 [20 0 0 30 0 0]  
  
%% use the image operator to input the matrix  
/J { currentfile picstr readhexstring pop} bdef  
{J} image  
001234567787765432100112345678887654321111233456789876543321 223  
[snipped]
```

... which looks correct to me.

How did you define the size of the area that TV should fill in?

Regards,
Norbert

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Karl Schultz](#) on Mon, 07 Feb 2005 16:32:41 GMT
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On Mon, 07 Feb 2005 06:05:17 -0800, jm wrote:

```
> That would be a last resort. I'd hope that maybe there will some  
> option  
> introduced at a later date (Tiger?).  
>  
> As Acrobat displays it fine, I guess it's "hard-wired" into  
> applications at  
> present. Adobe seem to have diverged a little from Apple's default  
> imaging model - if so, I can see why.  
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> Here's the original PDF if anyone wants to try out any ideas - view it  
> in both Acrobat and any of Preview/Keynote/Pages:  
>
```

> http://www.iesd.dmu.ac.uk/~jm/pickup/lum_int093_92_12h00.pdf
>
> I don't think it's anything to do with how the PDF was created.
> It's 'simply' Aqua is trying to be helpful: "Here is a graphic
> comprised
> of only a few tens of image (i.e. scalable postscript) pixels shown
> using tens of thousands of (LCD) display pixels - I will smooth it out
> to look *nicer*".
>
> -John

This discussion was also posted to uk.com.sys.mac where a promising-looking solution involving creating a PDF workflow with image interpolation turned off is discussed.

Karl

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Karl Schultz](#) on Mon, 07 Feb 2005 16:39:48 GMT
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On Mon, 07 Feb 2005 06:05:17 -0800, jm wrote:

> I don't think it's anything to do with how the PDF was created.
> It's 'simply' Aqua is trying to be helpful: "Here is a graphic
> comprised
> of only a few tens of image (i.e. scalable postscript) pixels shown
> using tens of thousands of (LCD) display pixels - I will smooth it out
> to look *nicer*".

This discussion was posted to uk.comp.sys.mac where there is a solution offered involving changing the PDF workflow to turn off image interpolation.

Karl

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Mon, 07 Feb 2005 16:47:34 GMT
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> Maybe your program mis-interprets some PostScript elements, such
> as pixmaps?

It's more something fundamental to the display system in OSX.

> How did you define the size of the area that TV should fill in?

Much as you did, only in cm. Am I right in guessing that you're not using OSX? I hope there's a few OSX users out there that repeat this quirk with their own code. Better still if they could show that it's *me* that's not getting it right....

-John

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Edd Edmondson](#) on Mon, 07 Feb 2005 16:49:41 GMT
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Karl Schultz <k____schultz@rsinc.com> wrote:
> On Mon, 07 Feb 2005 06:05:17 -0800, jm wrote:

>> I don't think it's anything to do with how the PDF was created.
>> It's 'simply' Aqua is trying to be helpful: "Here is a graphic
>> comprised
>> of only a few tens of image (i.e. scaleable postscript) pixels shown
>> using tens of thousands of (LCD) display pixels - I will smooth it out
>> to look *nicer*".

> This discussion was posted to uk.comp.sys.mac where there is a solution
> offered involving changing the PDF workflow to turn off image
> interpolation.

That doesn't work for me.

--
Edd

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Mon, 07 Feb 2005 16:50:38 GMT
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Didn't work for me. Also, just made a PDF from the EPS using Adobe Distiller. No change.

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X

Posted by [Edd Edmondson](#) on Mon, 07 Feb 2005 16:57:31 GMT

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jm@dmu.ac.uk wrote:

>> How did you define the size of the area that TV should fill in?

> Much as you did, only in cm. Am I right in guessing that you're not
> using
> OSX? I hope there's a few OSX users out there that repeat this quirk
> with
> their own code. Better still if they could show that it's *me* that's
> not getting
> it right....

I can confirm it using your pdf and I can also see it in other images I've created at very high zooms. It's nothing you're doing wrong that I can see.

Maybe if you tried upsampling the array you use within IDL, so that each 'pixel' in the plot is blown up to an n by n grid all of the same colour? That may persuade OS X to at least use narrow regions to interpolate over.

--

Edd

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Edd Edmondson](#) on Mon, 07 Feb 2005 17:00:02 GMT

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jm@dmu.ac.uk wrote:

> That would be a last resort. I'd hope that maybe there will some
> option
> introduced at a later date (Tiger?).

<http://www.apple.com/macosx/feedback/> - make sure you tell them you want it!

--

Edd

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Mon, 07 Feb 2005 18:12:56 GMT

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> I can confirm it using your pdf and I can also see it in other images
I've

> created at very high zooms. It's nothing you're doing wrong that I
can
> see.
>
> Maybe if you tried upsampling the array you use within IDL, so that
each
> 'pixel' in the plot is blown up to an n by n grid all of the same
colour?
> That may persuade OS X to at least use narrow regions to interpolate
over.

Thanks for trying it out. Yes, the upsampling did occur to me. Though
I
must admit the 'purist' in me thought that was too high a price to pay
just to
use the gee-whizz transitions in Keynote. I can still use Keynote to
make PDFs.
Heck, I'm even thinking of moving to Tex (TexShop) since Framemaker on
OSX
is not an option. Can't get more 'purist' than that.

Thanks again,

-John

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Karl Schultz](#) on Mon, 07 Feb 2005 18:50:51 GMT
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On Mon, 07 Feb 2005 08:50:38 -0800, jm wrote:

> Didn't work for me. Also, just made a PDF from the EPS using Adobe
> Distiller. No change.

OK, another item to investigate is to run the ColorSync utility. I
noticed that there is a filter setting that controls PDF image
interpolation. I do not know how to get this filter setting applied when
using Preview, but I bet the answer is in this area.

Karl

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Norbert Hahn](#) on Tue, 08 Feb 2005 09:36:22 GMT
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jm@dmu.ac.uk wrote:

>> Maybe your program mis-interprets some PostScript elements, such
>> as pixmaps?
>
> It's more something fundamental to the display system in OSX.

I hope it is not but rather a feature of the program you use.

>> How did you define the size of the area that TV should fill in?
>
> Much as you did, only in cm. Am I right in guessing that you're not
> using
> OSX?

I used Windows XP for that to find out what elements of PostScript are used by IDL. The IDL plotting devices (PS is one of them) does not depend on the operating system, so I'm pretty sure that if IDL translates TV into the PS image operator (using Windows XP) it will do so using OSX.

I tried a couple of PS interpreters to find how they in turn handle the image operator and all of them filled the rectangles specified by image with constant color. No interpolation occurred.

> I hope there's a few OSX users out there that repeat this quirk
> with
> their own code. Better still if they could show that it's *me* that's
> not getting
> it right....

So you should contact the author/service team/who ever of the program that causes the image operator to interpolate.

Norbert

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Tue, 08 Feb 2005 12:16:17 GMT

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> So you should contact the author/service team/who ever of the program
> that causes the image operator to interpolate.

I've logged it with Apple using their feedback form (the 'program' as such is the Aqua/OSX display system).

-John

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [Kenneth P. Bowman](#) on Wed, 09 Feb 2005 02:50:03 GMT

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In article <1107864976.994712.187490@z14g2000cwz.googlegroups.com>,
jm@dmu.ac.uk wrote:

>> So you should contact the author/service team/who ever of the program
>
>> that causes the image operator to interpolate.
>
> I've logged it with Apple using their feedback form (the 'program' as
> such is
> the Aqua/OSX display system).
>
> -John
>

I sent an example to my local Apple customer engineer. He can see that Adobe Reader (for example) and Apple programs such as Preview and Keynote display images differently (both on OS X). He is sending a request up the chain to have the image smoothing turned off, or at least made optional.

Ken Bowman

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [jm](#) on Wed, 09 Feb 2005 10:22:12 GMT

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> I sent an example to my local Apple customer engineer. He can see that
> Adobe Reader (for example) and Apple programs such as Preview and
> Keynote display images differently (both on OS X). He is sending a
> request up the chain to have the image smoothing turned off, or at least
> made optional.

Thanks, Ken. I think someone at RSI may also bring it to Apple's attention.
I'm sure that it will take a few nudges to get this noticed by Apple.

-John Mardaljevic

Subject: Re: Blurred display of images in PDFs created from EPS on Mac OS X
Posted by [K. Bowman](#) on Wed, 09 Feb 2005 19:04:24 GMT

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In article <1107944532.682495.318430@z14g2000cwz.googlegroups.com>, jm@dmu.ac.uk wrote:

> Thanks, Ken. I think someone at RSI may also bring it to Apple's
> attention.
> I'm sure that it will take a few nudges to get this noticed by Apple.
>
> -John Mardaljevic

I think the best approach is to tell Apple "I can't use Keynote for scientific presentations because it blurs my scientific graphics."

;-)

Ken
