Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Mon, 09 Oct 2006 21:55:17 GMT
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I should perhaps add that I'm using Windows XP and IDL 6.0.
Thanks,
Mark

mark skrev:

> Hello,
>
> I'm getting strange contouring effects (tiling effects) when using the
> TV function to display 8-bit grayscale images on my 8-bit grayscale
> monitor (graphic card: DOME). The same images displayed using other
> software on the same monitor look fine, as well as the same images
> displayed using IDL on a different monitor. So, there's some problem
> with IDL and the graphic card together. "Device, decomposed=1 or 0"
> doesn't solve this problem. Help with this greatly appreciated...
>
> Regards,
> Mark

Subject: Re: Problem displaying images on 8 bit monitor
Posted by David Fanning on Mon, 09 Oct 2006 22:01:45 GMT
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mark writes:

> I should perhaps add that I'm using Windows XP and IDL 6.0.

I suppose you have checked your monitor settings to be
sure you are using 256 colors, and that you have installed
the latest driver updates, huh? And you are sure the data
is scaled into the range of 0 to 255 before you display it?

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Mon, 09 Oct 2006 22:08:40 GMT
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Hi David,
Yes to your questions except for the latest driver updates (I will check that out).
As I mentioned, the exact same images opened up in another program other than IDL are displayed perfectly smooth using the same monitor. I've additionally tested this using indgen with 256 gray level values... in IDL, it comes out looking like a series of bands. In all other display programs it looks fine (smooth and continuous). So, there is something not set up right in my IDL environment... and I have no idea what it is...

Mark

David Fanning skrev:

> mark writes:
>
>> I should perhaps add that I'm using Windows XP and IDL 6.0.
>
> I suppose you have checked your monitor settings to be
> sure you are using 256 colors, and that you have installed
> the latest driver updates, huh? And you are sure the data
> is scaled into the range of 0 to 255 before you display it?
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
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Subject: Re: Problem displaying images on 8 bit monitor
Posted by David Fanning on Mon, 09 Oct 2006 22:22:13 GMT
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mark writes:

> So, there is something not set up right in my IDL environment...
> and I have no idea what it is...

I rather doubt this. :-)

Can you humor me? Try these commands:

```
IDL> Loadct, 0
```

Is this what you are seeing:

```
IDL> TV, bindgen(256) # bindgen(256)
```

What about this?

```
IDL> TVSCL, bindgen(256) # bindgen(256)
```

What about if you scale your image before you display it:

```
IDL> TV, BytScl(image)
```

Cheers,

David
--
David Fanning, Ph.D.
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Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Tue, 10 Oct 2006 09:10:44 GMT
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Hi David,

Thanks for you responses yesterday but I still can't get the images displayed properly. I'm sorry for insuating that IDL was at fault! :-) I'm sure I'm not doing something right...

In response to your suggestions yesterday:
TV, bindgen(256) # bindgen(256) yields a strange looking image (as expected)

TVSCL, bindgen(256) # bindgen(256) gives me an image of the type I've been getting: a gradient consisting of narrow bands (or tiles/contours). There are about 30 such distinct bands along the gradient. I'm not sure if that number is significant. It would help if I could send you a screen-dump or something to show you what I mean.

TV, bytscl(bindgen(256) # bindgen(256)) gives the same result as above with the bands.

Byte scaling my own images doesn't change anything (they're already in byte format).

So I'm still in the same situation...

David Fanning skrev:

> mark writes:
>
>> So, there is something not set up right in my IDL environment...
>> and I have no idea what it is...
>
> I rather doubt this. :-)
>
> Can you humor me? Try these commands:
>
> IDL> Loadct, 0
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>
> IDL> TV, bindgen(256) # bindgen(256)
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> What about this?
>
> IDL> TVSCL, bindgen(256) # bindgen(256)
>
> What about if you scale your image before you display it:
>
> IDL> TV, BytScl(image)
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> Cheers,
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> David
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> David Fanning, Ph.D.
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Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Tue, 10 Oct 2006 10:35:43 GMT
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Hi David,

Here are how the images look. Both of these images are of the same variable:
bytscl(bindgen(256) # bindgen(256))

This first image is how it should look, and it does using other display programs on my monitor:

http://hem.passagen.se/fysikern/idl/normal_display.tif

This image is a screen-capture using TVRD() of the same variable displayed in IDL using either TV and TVSCL.

http://hem.passagen.se/fysikern/idl/idl_display.tif

The monitor I have is a CRT high-resolution mammography monitor (around 1500x2500 pixels)

Any helpful hints?

Mark

mark skrev:

> Hi David,
>
> Thanks for you responses yesterday but I still can't get the images
> displayed properly. I'm sorry for insuating that IDL was at fault! :-)
> I'm sure I'm not doing something right...
>
> In response to your suggestions yesterday:
> TV, bindgen(256) # bindgen(256) yields a strange looking image (as
> expected)
>
> TVSCL, bindgen(256) # bindgen(256) gives me an image of the type I've
> been getting: a gradient consisting of narrow bands (or
> tiles/contours). There are about 30 such distinct bands along the
> gradient. I'm not sure if that number is significant. It would help if
> I could send you a screen-dump or something to show you what I mean.
>
> TV, bytscl(bindgen(256) # bindgen(256)) gives the same result as above
> with the bands.
>

> Byte scaling my own images doesn't change anything (they're already in
> byte format).
>
> So I'm still in the same situation...
>
>
> David Fanning skrev:
>
>> mark writes:
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Subject: Re: Problem displaying images on 8 bit monitor
Posted by David Fanning on Tue, 10 Oct 2006 10:54:36 GMT
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Mark writes:

> This image is a screen-capture using TVRD() of the same variable

> displayed in IDL using either TV and TVSCL.
>
> http://hem.passagen.se/fysikern/idl/idl_display.tif
>
>
> The monitor I have is a CRT high-resolution mammography monitor (around
> 1500x2500 pixels)
>
> Any helpful hints?

I can reproduce the "screwy" image on my display with the
following commands:

```
IDL> Loadct, 0, NColors=32
IDL> TV,BytScl( BytScl(bindgen(256) # bindgen(256), Top=31))
```

I'm not sure what this means (it's not even 5AM in the US
at the moment!), but the problem seems to do with a restricted
number of colors. Your monitor would appear to be top-notch.
A graphics driver problem? I really don't know.

What does HELP, /DEVICE have to say?

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
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Subject: Re: Problem displaying images on 8 bit monitor
Posted by Jo Klein on Tue, 10 Oct 2006 10:58:26 GMT
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Hi Mark,
This reminds me of colour allocation issues that were present in ancient
UNIX environments, where the number of colours allocated to IDL was
limited by a number of factors. I think Windows will reserve a number of
colours on an 8 bit device for its own purposes, such as window
decorations. Is there an option to increase the number of colours for
your graphics card? What are the contents of the !d variable? In
particular, !d.colors? What happens when you try to display a window
with window,colors=256? Do you run your monitor as a dual-head display,

or is it mirroring the contents of your primary monitor?
Just a few wild guesses,
Jo

mark wrote:
> Hi David,
>
> Here are how the images look. Both of these images are of the same
> variable:
> bytscl(bindgen(256) # bindgen(256))
>
> This first image is how it should look, and it does using other display
> programs on my monitor:
>
> http://hem.passagen.se/fysikern/idl/normal_display.tif
>
> This image is a screen-capture using TVRD() of the same variable
> displayed in IDL using either TV and TVSCL.
>
> http://hem.passagen.se/fysikern/idl/idl_display.tif
>
>
> The monitor I have is a CRT high-resolution mammography monitor (around
> 1500x2500 pixels)
>
> Any helpful hints?
>
>
> Mark
>
>
>
> mark skrev:
>
>
>> Hi David,
>>
>> Thanks for you responses yesterday but I still can't get the images
>> displayed properly. I'm sorry for insuating that IDL was at fault! :-)
>> I'm sure I'm not doing something right...
>>
>> In response to your suggestions yesterday:
>> TV, bindgen(256) # bindgen(256) yields a strange looking image (as
>> expected)
>>
>> TVSCL, bindgen(256) # bindgen(256) gives me an image of the type I've
>> been getting: a gradient consisting of narrow bands (or
>> tiles/contours). There are about 30 such distinct bands along the

>> gradient. I'm not sure if that number is significant. It would help if
>> I could send you a screen-dump or something to show you what I mean.
>>
>> TV, bytscl(bindgen(256) # bindgen(256)) gives the same result as above
>> with the bands.
>>
>> Byte scaling my own images doesn't change anything (they're already in
>> byte format).
>>
>> So I'm still in the same situation...
>>
>>
>> David Fanning skrev:
>>
>>
>>> mark writes:
>>>
>>>
>>>> So, there is something not set up right in my IDL environment...
>>>> and I have no idea what it is...
>>>
>>> I rather doubt this. :-)
>>>
>>> Can you humor me? Try these commands:
>>>
>>>   IDL> Loadct, 0
>>>
>>> Is this what you are seeing:
>>>
>>>   IDL> TV, bindgen(256) # bindgen(256)
>>>
>>> What about this?
>>>
>>>   IDL> TVSCL, bindgen(256) # bindgen(256)
>>>
>>> What about if you scale your image before you display it:
>>>
>>>   IDL> TV, BytScl(image)
>>>
>>> Cheers,
>>>
>>> David
>>> --
>>> David Fanning, Ph.D.
>>> Fanning Software Consulting, Inc.
>>> Coyote's Guide to IDL Programming: http://www.dfanning.com/
>>> Sepore ma de ni thui. ("Perhaps thou speakest truth.")
>

>

Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Tue, 10 Oct 2006 12:55:14 GMT
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Hello,

This is how my !d system variable looks like (see below). Isn't it a bit strange that the N_COLORS variable says 16.7 million whereas in Windows systems settings, the graphic card is set to 8 bits? There is another graphic card for a normal monitor, which is inactivated but may this be influencing the idl settings..?

```
help, /structure, !d
** Structure !DEVICE, 17 tags, length=84, data length=84:
   NAME            STRING    'WIN'
   X_SIZE          LONG              256
   Y_SIZE          LONG              256
   X_VSIZE         LONG              256
   Y_VSIZE         LONG              256
   X_CH_SIZE       LONG                7
   Y_CH_SIZE       LONG               10
   X_PX_CM         FLOAT         54.0000
   Y_PX_CM         FLOAT         96.0000
   N_COLORS        LONG        16777216
   TABLE_SIZE      LONG              256
   FILL_DIST       LONG                1
   WINDOW          LONG                3
   UNIT            LONG                0
   FLAGS           LONG           328124
   ORIGIN          LONG      Array[2]
   ZOOM            LONG      Array[2]
```

Jo Klein skrev:

> Hi Mark,
> This reminds me of colour allocation issues that were present in ancient
> UNIX environments, where the number of colours allocated to IDL was
> limited by a number of factors. I think Windows will reserve a number of
> colours on an 8 bit device for its own purposes, such as window
> decorations. Is there an option to increase the number of colours for
> your graphics card? What are the contents of the !d variable? In
> particular, !d.colors? What happens when you try to display a window
> with window,colors=256? Do you run your monitor as a dual-head display,

> or is it mirroring the contents of your primary monitor?
> Just a few wild guesses,
> Jo
>
> mark wrote:
>> Hi David,
>>
>> Here are how the images look. Both of these images are of the same
>> variable:
>> bytscl(bindgen(256) # bindgen(256))
>>
>> This first image is how it should look, and it does using other display
>> programs on my monitor:
>>
>> http://hem.passagen.se/fysikern/idl/normal_display.tif
>>
>> This image is a screen-capture using TVRD() of the same variable
>> displayed in IDL using either TV and TVSCL.
>>
>> http://hem.passagen.se/fysikern/idl/idl_display.tif
>>
>>
>> The monitor I have is a CRT high-resolution mammography monitor (around
>> 1500x2500 pixels)
>>
>> Any helpful hints?
>>
>>
>> Mark
>>
>>
>>
>> mark skrev:
>>
>>
>>> Hi David,
>>>
>>> Thanks for you responses yesterday but I still can't get the images
>>> displayed properly. I'm sorry for insuating that IDL was at fault! :-)
>>> I'm sure I'm not doing something right...
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>>> In response to your suggestions yesterday:
>>> TV, bindgen(256) # bindgen(256) yields a strange looking image (as
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>>> TVSCL, bindgen(256) # bindgen(256) gives me an image of the type I've
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>>> tiles/contours). There are about 30 such distinct bands along the

>>> gradient. I'm not sure if that number is significant. It would help if
>>> I could send you a screen-dump or something to show you what I mean.
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>>> TV, bytscl(bindgen(256) # bindgen(256)) gives the same result as above
>>> with the bands.
>>>
>>> Byte scaling my own images doesn't change anything (they're already in
>>> byte format).
>>>
>>> So I'm still in the same situation...
>>>
>>>
>>> David Fanning skrev:
>>>
>>>
>>>> mark writes:
>>>>
>>>>
>>>> >So, there is something not set up right in my IDL environment...
>>>> >and I have no idea what it is...
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>>>> I rather doubt this. :-)
>>>>
>>>> Can you humor me? Try these commands:
>>>>
>>>>   IDL> Loadct, 0
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>>>> Is this what you are seeing:
>>>>
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>>>>
>>>> What about if you scale your image before you display it:
>>>>
>>>>   IDL> TV, BytScl(image)
>>>>
>>>> Cheers,
>>>>
>>>> David
>>>> --
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>>>> Sepore ma de ni thui. ("Perhaps thou speakest truth.")
>>

>>

Subject: Re: Problem displaying images on 8 bit monitor
Posted by Karl Schultz on Tue, 10 Oct 2006 15:12:37 GMT
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On Tue, 10 Oct 2006 04:54:36 -0600, David Fanning wrote:

> Mark writes:
>
>> This image is a screen-capture using TVRD() of the same variable
>> displayed in IDL using either TV and TVSCL.
>>
>> http://hem.passagen.se/fysikern/idl/idl_display.tif
>>
>>
>> The monitor I have is a CRT high-resolution mammography monitor (around
>> 1500x2500 pixels)
>>
>> Any helpful hints?
>
> I can reproduce the "screwy" image on my display with the
> following commands:
>
>
> IDL> Loadct, 0, NColors=32
> IDL> TV,BytScl(BytScl(bindgen(256) # bindgen(256), Top=31))
>
> I'm not sure what this means (it's not even 5AM in the US
> at the moment!), but the problem seems to do with a restricted
> number of colors. Your monitor would appear to be top-notch.
> A graphics driver problem? I really don't know.
>
> What does HELP, /DEVICE have to say?
>
> Cheers,
>
> David

The problem is that this is a DOME card/monitor that uses 12 bits per pixel greyscale.

His "other" display programs probably are written specifically for this card, and that's why the image looks smooth.

IDL isn't leveraging the 12-bit per pixel feature of this device and needs

to be modified to do so.

Mark should forward a request to ITTVIS Tech support, asking that IDL
support this device in 12-bit.

Karl

Subject: Re: Problem displaying images on 8 bit monitor
Posted by badjelly.witch on Tue, 10 Oct 2006 20:43:54 GMT
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Karl Schultz wrote:

> The problem is that this is a DOME card/monitor that uses 12 bits per
> pixel greyscale.
>
> His "other" display programs probably are written specifically for this
> card, and that's why the image looks smooth.
>
> IDL isn't leveraging the 12-bit per pixel feature of this device and needs
> to be modified to do so.
>
> Mark should forward a request to ITTVIS Tech support, asking that IDL
> support this device in 12-bit.

Tell them Karl sent you.

Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Wed, 11 Oct 2006 09:28:55 GMT
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The DOME card/monitor I have uses 8 bits per pixel grayscale - it's set
to a 256 level static grayscale and there is no option for this card to
increase the bit-depth.

The other display programs I have used (that work fine with this card)
are ImageJ and Osiris, i.e. normal shareware display programs
downloaded from the web that are not at all specifically designed for
this card. I'm fairly sure that even Paintshop word work, though I
haven't installed and tested that.

On this monitor, IDL is displaying the 8 bit images 5 bit, i.e. there
are only 32 discrete gray level values being displayed instead of 256.
That is why the image does not look smooth. I can't understand why this
is the case, but I will take your advice and forward a message to Tech

Support and see what they say.

Mark Hadfield skrev:

> Karl Schultz wrote:
>
>> The problem is that this is a DOME card/monitor that uses 12 bits per
>> pixel greyscale.
>>
>> His "other" display programs probably are written specifically for this
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>> to be modified to do so.
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>> Mark should forward a request to ITTVIS Tech support, asking that IDL
>> support this device in 12-bit.
>
> Tell them Karl sent you.

Subject: Re: Problem displaying images on 8 bit monitor
Posted by Karl Schultz on Wed, 11 Oct 2006 15:21:40 GMT
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On Wed, 11 Oct 2006 02:28:55 -0700, mark wrote:

> The DOME card/monitor I have uses 8 bits per pixel grayscale - it's set
> to a 256 level static grayscale and there is no option for this card to
> increase the bit-depth.
>
> The other display programs I have used (that work fine with this card)
> are ImageJ and Osiris, i.e. normal shareware display programs
> downloaded from the web that are not at all specifically designed for
> this card. I'm fairly sure that even Paintshop word work, though I
> haven't installed and tested that.
>
> On this monitor, IDL is displaying the 8 bit images 5 bit, i.e. there
> are only 32 discrete gray level values being displayed instead of 256.
> That is why the image does not look smooth. I can't understand why this
> is the case, but I will take your advice and forward a message to Tech
> Support and see what they say.
>
>

OK. We occasionally get a query about 12-bit DOME card support and I had incorrectly guessed that this was your problem.

I don't know what's causing the problem. The IDL code isn't dealing with the greyscale aspect of this device quite correctly. I can't really tell without having the card here in front of me. I wish I could get a hold of one of these for a bit.

Karl

Subject: Re: Problem displaying images on 8 bit monitor
Posted by mark on Wed, 11 Oct 2006 18:46:52 GMT
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Hello,

Most (all??) modern DOME cards are 12-bit; this one is a bit older.

It's frustrating because even Windows' very own shoddy Paint program can display my 8-bit images correctly so I can't understand why IDL would have a problem.
I'm in touch with ITTS about this. Not much progress thus far.

Thanks for your help though. If you like, I can let you know what the problem was if we ever manage to solve it.

Regards,
Mark

Karl Schultz skrev:

> On Wed, 11 Oct 2006 02:28:55 -0700, mark wrote:
>
>> The DOME card/monitor I have uses 8 bits per pixel grayscale - it's set
>> to a 256 level static grayscale and there is no option for this card to
>> increase the bit-depth.
>>
>> The other display programs I have used (that work fine with this card)
>> are ImageJ and Osiris, i.e. normal shareware display programs
>> downloaded from the web that are not at all specifically designed for
>> this card. I'm fairly sure that even Paintshop word work, though I
>> haven't installed and tested that.
>>
>> On this monitor, IDL is displaying the 8 bit images 5 bit, i.e. there
>> are only 32 discrete gray level values being displayed instead of 256.
>> That is why the image does not look smooth. I can't understand why this
>> is the case, but I will take your advice and forward a message to Tech
>> Support and see what they say.

>>
>>
>
> OK. We occasionally get a query about 12-bit DOME card support and I had
> incorrectly guessed that this was your problem.
>
> I don't know what's causing the problem. The IDL code isn't dealing with
> the greyscale aspect of this device quite correctly. I can't really tell
> without having the card here in front of me. I wish I could get a hold of
> one of these for a bit.
>
> Karl

Subject: Re: Problem displaying images on 8 bit monitor
Posted by Karl Schultz on Wed, 11 Oct 2006 20:28:25 GMT
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On Wed, 11 Oct 2006 11:46:52 -0700, mark wrote:

> Most (all??) modern DOME cards are 12-bit; this one is a bit older.

Thanks. I feel better now. :-)

> It's frustrating because even Windows' very own shoddy Paint program
> can display my 8-bit images correctly so I can't understand why IDL
> would have a problem.

I think it is a problem in IDL, and I can't tell what it is until I can
debug it. There are some other options that we could discuss.

Colors for image rendering and colors for other prims are handled very
differently by IDL.

What happens if you:
- create a 256x256 window
- draw 256 horizontal lines with PLOTS, specifying COLOR as 0, 1, ..., 255
for each horizontal line? (decomposed=0, color table 0 loaded)

Do you get a smooth gradient, or the same 32 shades?

> I'm in touch with ITTS about this. Not much progress thus far.

I think that the status quo here is that we don't support the 12-bit DOME
cards and I directed you there (to ITTVIS Tech Support) to add to the list
of people needing it.

But you have an 8-bit card. Tech Support can open and track the problem

for you, but we can't do much about it without a card.

If you want to work with me directly on it, we can take it up on email (kschultz at ittvis dot com). I have some ideas.

Karl
