Subject: Memory leak in IDL hdf5 library?
Posted by Eddie Schlafly on Tue, 18 Jan 2011 19:07:06 GMT
View Forum Message <> Reply to Message

I think I've found a memory leak in the IDL hdf5 library and I wanted to know if anyone knows what I'm doing wrong or what is going on. I've appended some code that leaks memory based on the IDL hdf5 example code.

I modified the example ex_create_hdf5 routine to write a structure containing an array of structures; if the number of elements in this array is greater than 1, I see a memory leak.

Running:
ex_create_hdf5 & for i=0l,10 do ex_read_hdf5
causes the amount of memory allocated to IDL according to "top" to increase by ~700 MB every time the line is run, despite the fact that the written file is only about 40 KB.

IDL's
help, /memory
does not change and gives no indication that hundreds of MB of memory are being used by IDL. Likewise,
help, /heap
shows no pointers or objects.

I am running:
help, !version, /st
```
** Structure !VERSION, 8 tags, length=104, data length=100:
   ARCH            STRING    'x86_64'
   OS              STRING    'linux'
   OS_FAMILY       STRING    'unix'
   OS_NAME         STRING    'linux'
   RELEASE         STRING    '7.1.1'
   BUILD_DATE      STRING    'Aug 21 2009'
   MEMORY_BITS     INT           64
   FILE_OFFSET_BITS
                   INT           64
```

Any hints as to what is going on?

Thanks for your help,

Eddie Schlafly

--

PRO ex_create_hdf5

```
  file = 'hdf5_test.h5'
  fid = H5F_CREATE(file)

  ;; create data
  data0 = { a:replicate({b:0},2) }
  data = replicate(data0, 10000)

  ;; get data type and space, needed to create the dataset
  datatype_id = H5T_IDL_CREATE(data)
  dataspace_id = H5S_CREATE_SIMPLE(size(data,/DIMENSIONS))

  ;; create dataset in the output file
  dataset_id = H5D_CREATE(fid,$
    'Sample data',datatype_id,dataspace_id)
  ;; write data to dataset
  H5D_WRITE,dataset_id,data

  ;; close all open identifiers
  H5D_CLOSE,dataset_id
  H5S_CLOSE,dataspace_id
  H5T_CLOSE,datatype_id
  H5F_CLOSE,fid

END

PRO ex_read_hdf5

  ; Open the HDF5 file.
  file = 'hdf5_test.h5'
  file_id = H5F_OPEN(file)

  ; Open the image dataset within the file.
  ; This is located within the /images group.
  ; We could also have used H5G_OPEN to open up the group first.
  dataset_id1 = H5D_OPEN(file_id, 'Sample data')

  ; Read in the actual image data.
  image = H5D_READ(dataset_id1)

  ; Close all our identifiers so we don't leak resources.
  H5D_CLOSE, dataset_id1
  H5F_CLOSE, file_id

END
```

Subject: Re: Memory leak in IDL hdf5 library?
Posted by Eddie Schlafly on Mon, 24 Jan 2011 19:13:43 GMT
View Forum Message <> Reply to Message

Sorry to bother everyone again. Is there any extra information I can provide about this problem? It would be great if we could use IDL to process hdf5 files, but this leak is killing us.

Thanks a lot,

Eddie Schlafly

Subject: Re: Memory leak in IDL hdf5 library?
Posted by David Fanning on Mon, 24 Jan 2011 19:45:46 GMT
View Forum Message <> Reply to Message

Eddie Schlafly writes:

> Sorry to bother everyone again. Is there any extra information I can
> provide about this problem? It would be great if we could use IDL to
> process hdf5 files, but this leak is killing us.

I have almost NO experience with HDF5 files, but I see a lot of CLOSE statements of various sorts in your code. In the on-line help, I find a H5_CLOSE by itself that is said to "clean up memory".

I don't notice any change on my Windows machines with or without this extra "close" statement, but I wonder if it would make a difference for you?

Cheers,

David

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

Subject: Re: Memory leak in IDL hdf5 library?
Posted by Eddie Schlafly on Mon, 24 Jan 2011 20:50:50 GMT
View Forum Message <> Reply to Message

Thanks for your help, David.

David Fanning writes:
> I don't notice any change on my Windows machines with or without this
> extra "close" statement, but I wonder if it would make a difference for
> you?

I take it that you don't see any leak under Windows?

Thanks for pointing out h5_close! I just followed the example files from the hdf5 documentation, which didn't used h5_close.

If I add an h5_close at the end of ex_read_hdf5 and ex_create_hdf5, I no longer leak memory. If, however, I just try to h5_close when I'm done reading in a bunch of files, I still leak.

Adding h5_close, however, doesn't change the problem I am having where the amount of memory used is many times the size of the file being read in. The ~40K file I am reading in ends up reading in to about 50 MB of memory, which is freed by the h5_close. The files are also slower to read in than I would expect. If I write out a structure with a zero in it, rather than a nested structure with a zero in it, things read in quickly and no memory is leaked, even without h5_close.

Thanks a lot,

Eddie Schlafly

Subject: Re: Memory leak in IDL hdf5 library?
Posted by David Fanning on Mon, 24 Jan 2011 21:08:51 GMT
View Forum Message <> Reply to Message

Eddie Schlafly writes:

> I take it that you don't see any leak under Windows?

No, I don't think so. I don't see anything dramatic
happening with memory.
>
> Thanks for pointing out h5_close! I just followed the example files from
> the hdf5 documentation, which didn't used h5_close.
>
> If I add an h5_close at the end of ex_read_hdf5 and ex_create_hdf5, I no
> longer leak memory. If, however, I just try to h5_close when I'm done
> reading in a bunch of files, I still leak.
>
> Adding h5_close, however, doesn't change the problem I am having where

> the amount of memory used is many times the size of the file being read
> in. The ~40K file I am reading in ends up reading in to about 50 MB of
> memory, which is freed by the h5_close. The files are also slower to
> read in than I would expect. If I write out a structure with a zero in
> it, rather than a nested structure with a zero in it, things read in
> quickly and no memory is leaked, even without h5_close.

I'm really just waving my hands here, but if I read the
H5_CLOSE documentation correctly, I would guess that there
is an enormous amount of overhead in "linking" to the H5
libraries. I would guess it is this memory that is freed
with H5_CLOSE. Reading the files is probably slower because
you have to load and unload all this overhead each time.

Have you discussed this with ITTVIS? What do they recommend?

Cheers,

David

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

Subject: Re: Memory leak in IDL hdf5 library?
Posted by Eddie Schlafly on Tue, 25 Jan 2011 00:43:11 GMT
View Forum Message <> Reply to Message

David Fanning writes:

> No, I don't think so. I don't see anything dramatic happening with
> memory.

Thanks for checking. No clue what's going on.

> Have you discussed this with ITTVIS? What do they recommend?

No, I tried navigating the Support section of their site for a while and
got confused. I'll try harder.

Thanks a lot,

Eddie Schlafly

Subject: Re: Memory leak in IDL hdf5 library?
Posted by Alain Kattnig on Tue, 25 Jan 2011 08:52:44 GMT
View Forum Message <> Reply to Message

On 25 jan, 01:43, Eddie Schlafly <schla...@hotmail.com> wrote:
> David Fanning writes:
>> No, I don't think so. I don't see anything dramatic happening with
>> memory.
>
> Thanks for checking. No clue what's going on.
>
>> Have you discussed this with ITTVIS? What do they recommend?
>
> No, I tried navigating the Support section of their site for a while and
> got confused. I'll try harder.
>
> Thanks a lot,
>
> Eddie Schlafly

If you are using IDL 7, there is a patch for HDF 5, called idl712patch
which settled various troubles for me.

Best

Subject: Re: Memory leak in IDL hdf5 library?
Posted by Eddie Schlafly on Mon, 31 Jan 2011 23:43:40 GMT
View Forum Message <> Reply to Message

Alain Kattnig writes:

> If you are using IDL 7, there is a patch for HDF 5, called idl712patch
> which settled various troubles for me.

Couldn't get a hold of this, but I talked to ITTVIS and they have filed a
bug report now. I seem the same behavior under IDL 8 too. I guess I'll
just try harder to avoid nested structures in hdf5 files in the future.

Thanks everyone,

Eddie Schlafly

Subject: Re: Memory leak in IDL hdf5 library?
Posted by Alain Kattnig on Tue, 01 Feb 2011 10:12:55 GMT
View Forum Message <> Reply to Message

On 1 fév, 00:43, Eddie Schlafly <schla...@hotmail.com> wrote:
> Alain Kattnig writes:
>> If you are using IDL 7, there is a patch for HDF 5, called idl712patch
>> which settled various troubles for me.
>
> Couldn't get a hold of this, but I talked to ITTVIS and they have filed a
> bug report now. I seem the same behavior under IDL 8 too. I guess I'll
> just try harder to avoid nested structures in hdf5 files in the future.
>
> Thanks everyone,
>
> Eddie Schlafly

Unfortunately the IDL 7.1.2 patch is only available for Windows
systems ...
