
Subject: ncdf + x-connection + many files = crazy.
Posted by [Matt\[2\]](#) on Tue, 08 Feb 2011 20:37:23 GMT
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Hey all,

I've got a great riddle for you today. (Long story short, can you run the test code included below to completion on your machine?) I've already filed a bug report, but I want to see if other people can reproduce these errors.

I'm experiencing machine/version-dependent, non-deterministic behavior that seems to present itself orthogonal to the triggering mechanism. In other words, I've got a crazy-making problem.

I experienced this in working code, but through patient debugging, I've pared this down until I've got a relatively small program that demonstrates the problem behavior.

The undesirable behavior is a NCDF_OPEN error (NC_ERROR=-31) after some *random* number of open/close iterations on a netcdf file that was created with IDL (or possibly a segfault core dump on other machines.). The second feature is that I don't see this behavior until I make an x-connection of some sort (window, /free, or even a "device, depth=depth" will cause errors)

Machine 1: (only has idl 7.0.1 64bit installed)

```
savoie@snow:~/tmp> uname -a
```

```
Linux snow 2.6.27.54-0.2-default #1 SMP 2010-10-19 18:40:07 +0200  
x86_64 x86_64 x86_64 GNU/Linux
```

Machine 2 (fails with 32 bit idl7.0.1 & idl6.4):

```
savoie@snowblower:~/tmp> uname -a
```

```
Linux snowblower 2.6.34.7-0.5-default #1 SMP 2010-10-25 08:40:12 +0200  
i686 i686 i386 GNU/Linux
```

All the code does is open and close a netcdf file, many, many times. But after an x-connection (via "window, /free"), the code errors out at a different spot in the iteration.

Below is the output I get on the problem machines and below that, the source code for you to try at home. For extra credit, modify the code to open a netcdf file created with a different program than IDL, NCO for example.

--OUTPUT-----

savoie@snow:~/tmp> idl70
IDL Version 7.0.1 (linux x86_64 m64). (c) 2008, ITT Visual Information
Solutions
Installation number: 100-431.
Licensed for use by: University of Colorado

```
IDL> .run ./crash_ncdf.pro
% Compiled module: CREATE_HAND_SAMPLE.
% Compiled module: CRASH_NCDF.
IDL> crash_ncdf
% Loaded DLM: NCDF.
Successfully completed first iterations
i =      143017
ncdf_fid =      5
% CRASH_NCDF: NCDF_OPEN: Unable to open the file "/projects/NRTSI-G/
tmp_crashing_ncdf/sample_h
and.nc".
          (NC_ERROR=-31)
% Execution halted at: CRASH_NCDF      44 /homes/snowblower/savoie/
tmp/crash_ncdf.pro
%          $MAIN$
```

Sample Test Code:

```
;+=====
; :Author: Matt Savoie <savoie@nsidc.org>
; :Copyright: (C) <2011> University of Colorado.
; :Version: $Id:$
;
; Created 02/03/2011
; National Snow & Ice Data Center, University of Colorado, Boulder
;-=====*/
```

```
;+
; Generate a very simple netcdf file.
;-
pro create_hand_sample, file
  compile_opt idl2, logical_predicate

  sample_var = dindgen( 4, 3 )
  ncid = ncdf_create( file, /Clobber )
  dimidx = ncdf_dimdef( ncid, 'x', 4 )
  dimidy = ncdf_dimdef( ncid, 'y', 3 )
  varid = ncdf_vardef( ncid, 'variable', /double )
  ncdf_control, ncid, /ENDEF
  ncdf_varput, ncid, varid, sample_var
```

```

ncdf_close, ncid

end

;+
; This is just a sample looping program that shows a problem
; Opening and Closing a single netcdf file many times.
;-
pro crash_ncdf
  compile_opt idl2, logical_predicate

  catch, theError
  if theError ne 0 then begin
    Catch, /cancel
    print, "i = ", i
    print, "ncdf_fid = ", ncdf_fid
    message, !ERROR_STATE.msg
  endif

  file = './sample.nc'
  create_hand_sample, file

  long_iteration = 1900000L

  for i = 0l, long_iteration do begin
    ncdf_fid = ncdf_open( file, write = 0 )
    ncdf_close, ncdf_fid
  endfor

  print, 'Successfully completed first iterations'
  window, /free
  wdelete

  for i = 0l, long_iteration do begin
    ncdf_fid = ncdf_open( file, write = 0 )
    ncdf_close, ncdf_fid
  endfor

  print, 'Successfully completed second iterations'

end

```
