Subject: Re: .full reset session causing a seg fault Posted by Karl Schultz on Fri, 10 Feb 2006 17:59:48 GMT

View Forum Message <> Reply to Message

On Fri, 10 Feb 2006 08:25:14 -0800, Ed Wright wrote:

```
> To: IDL users
```

- > I developed a large dlm (335 routines to interface IDL to the NAIF
- > CSPICE library) which seems to run correctly on Solaris, OSX, Linux, and
- > Windows.

- > This morning while testing an addition to the interface set, I
- > discovered the .full\_reset\_session command causes a seg fault on OS X,
- > Linux and Windows, e.g.:

>

- IDL> print, cspice i2000()
- > % Loaded DLM: ICY.
- 2451545.0
- > IDL> .full reset session
- > Segmentation fault
- > skynet 20:

- > I used this command quite often during initial development. Can anyone
- > provide advice as to what mechanism might cause this event?

One thing that I can suggest is that your DLM is allocating memory someplace and the DLM code is overwriting memory outside the bounds of the allocation, damaging the memory allocator data structures. When IDL frees memory it allocated as part of the reset session process, it may try to free a block whose associated memory control block got damaged, which leads to a crash.

Memory control blocks often reside close to the actual memory that was allocated, so it is pretty easy to whack one. Also, sometimes a block can get damaged at a certain point in time and the damage may never be noticed because the process terminates in a way that frees the entire heap at once. Or the damage may not be noticed until much later because the memory block is long-lived and does not get freed until something drastic like reset session happens.

One way to verify this assumption is to run under a debugger and look at the resulting stack trace. If the stack frame at the top of the call stack indicates that the program was in one of the memory allocation or free routines (malloc or free), then that's the problem. If the top of the call stack indicates the crash happened someplace else, like in IDL, it is possible that a pointer important to IDL got whacked by the DLM and IDL gets lost because of that.

This isn't necessarily a bug in CSPICE. It is possible that the IDL layer isn't checking for the right data types passed to the DLM and may be doing the wrong thing based on the data passed in, etc. Lots of possibilities. But I think a memory control block overwrite is a likely cause. Good luck.

Karl

Subject: Re: .full\_reset\_session causing a seg fault Posted by Haje Korth on Fri, 10 Feb 2006 22:02:17 GMT

View Forum Message <> Reply to Message

## Ed.

just FYI: I get the same error with cspice\_j2000 in IDL 6.2 for Windows. I recompiled the DLM from your sources using VS2005. Have you stepped through it with a dubugger?

Cheers, Haje

"Ed Wright" <ed.wright@[null].jpl.nasa.gov> wrote in message news:dsiepa\$a7l\$1@nntp1.jpl.nasa.gov...

> To: IDL users

>

>

- > I developed a large dlm (335 routines to interface IDL to the NAIF CSPICE
- > library) which seems to run correctly on Solaris, OSX, Linux, and Windows.
- > This morning while testing an addition to the interface set, I discovered
- > the .full\_reset\_session command causes a seg fault on OS X, Linux and
- > Windows, e.g.:

>

- > IDL> print, cspice\_j2000()
- > % Loaded DLM: ICY.
- > 2451545.0
- > IDL> .full\_reset\_session
- > Segmentation fault
- > skynet 20:

>

- > I used this command quite often during initial development. Can anyone
- > provide advice as to what mechanism might cause this event?
- > As always,
- > Ed Wright
- > ed.wright@[null]jpl.nasa.gov
- > 1-818-354-0371

> > --

> DISCLAIMER: JPL requires notice in all electronic communication that

- > any and all opinions presented herein are my own and do not, in any
- > way, represent the opinion or policy of JPL, CalTech, NASA, or the US
- > Government.

>

> Disclaimers are without standing on traffic from this domain.

>

- > I do not accept responsibility for unexpected collisions between NASA
- > vehicles and Alien cruisers, any resulting interplanetary war, or a
- > grumpy Kilrathi. I take full credit if we take out a Covenant
- > capital ship, frying the Elites and Brutes.

Subject: Re: .full\_reset\_session causing a seg fault Posted by Karl Schultz on Sat, 11 Feb 2006 01:53:08 GMT View Forum Message <> Reply to Message

On Fri, 10 Feb 2006 08:25:14 -0800, Ed Wright wrote:

> To: IDL users

>

- > I developed a large dlm (335 routines to interface IDL to the NAIF
- > CSPICE library) which seems to run correctly on Solaris, OSX, Linux, and
- > Windows.

>

- > This morning while testing an addition to the interface set, I
- > discovered the .full\_reset\_session command causes a seg fault on OS X,
- > Linux and Windows, e.g.:

>

- > IDL> print, cspice\_j2000()
- > % Loaded DLM: ICY.
- > 2451545.0
- > IDL> .full reset session
- > Segmentation fault
- > skynet 20:

>

- > I used this command quite often during initial development. Can anyone
- > provide advice as to what mechanism might cause this event?

Turns out that the DLM file is missing an entry for

CSPICE\_REMOVC

If you add it (by duplicating the CSPICE\_REMOVD line and changing the D to a C), the problem should go away. At least it did for me.

We'll look into the seg fault issue.

Karl