Subject: Passing an array from IDL to MPI
Posted by Miska Le Louarn on Mon, 14 Jan 2002 07:47:50 GMT
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Hi all IDL / parallel computing experts !

I am trying to integrate a piece of MPI-code written in C into my IDL program.
I have a cube of data produced in the IDL code, which needs to be Fourier transformed. So I want to write a little MPI program (in C) which uses several CPUs to compute the FFT of each plane in the cube.
My problem is that I need to pass the data cube to the MPI program. This would not a problem with a plain C program (a simple call_external would do the trick), but MPI likes to be lauched with the "mpirun" command which initializes all the parallel stuff.

Any ideas ?
Of course I could write the data cube to a file from IDL. I could then spawn the mpirun process from IDL and have the MPI code read the file. But I think there is a significant loss of time doing that. Plus it's not very elegant...

I hope someone has an idea...

Thanks in advance !

Miska

PS: I am using MPICH under Linux. The C code uses FFTW.

--
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*

Subject: Re: Passing an array from IDL to MPI
Posted by ronn on Mon, 21 Jan 2002 23:05:34 GMT
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in article 3C4C369A.5070807@eso.org, Miska Le Louarn at lelouarn@eso.org wrote on 1/21/02 10:41 AM:

>> I have written an IDL interface to PVM (another parallel processing system)

>> so it is possible to do. PVM must also be initialized with a function call
>> that returns some parameters. You then spawn off the child processes with
>> these parameters as part of the call.
>>
>> What this means is that you have to write a multi-function dll that contains
>> all the interface routines that you need.
>
>
> Hmm, this looks interesting...
> Could you give a 2 line example on how to do this ? :-)
> For the moment, I know how to use call externals and spawns. What is, in
> this case, the big advantage of using DLLs ?
>
2 lines! I wrote a 75 page book on how to do this! The advantage of DLL's
is that they become "built in" IDL routines so that you get maximum speed
without the hassle of Call_external.

Ronn

--
Ronn Kling
KRS, inc.
email: ronn@rlkling.com
"Application Development with IDL"ï¿½ programming book updated for IDL5.5!
"Calling C from IDL, Using DLM's to extend your IDL code" NEW BOOK!
http://www.rlkling.com/

Subject: Re: Passing an array from IDL to MPI
Posted by bruhwile on Mon, 28 Jan 2002 04:03:21 GMT
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Hi Miska,

At Tech-X, we have developed prototype software that enables
parallel computing with IDL, using MPI. You can find a little
information at URL http://www.techxhome.com/products/mpidl

In our approach, you launch a light-weight application using
mpirun (or whatever script your MPI implementation uses).
Then each instance of your application brings in IDL as a
shared object, via the "callable IDL" mechanism. Processor
0 gives you an interactive IDL prompt, while the other
processors invoke IDL in a background mode.

The multiple IDL instances can now invoke IDL scripts
that call out to the MPI library of your choice, using

IDL-friendly routines that wrap the usual MPI functions
through a dynamically loadable module. We've used MPICH
under Linux and also Compaq's native MPI implementation
under Tru64 Unix.

This is perhaps a bit more than you were asking for, but
our approach will allow you to write a fully parallel
application entirely in IDL.

We have prototyped this approach under a short-term gov't
grant and shown that it works. We're now looking at
parallelizing some IDL visualization features. A supported
product won't be available for a year or so -- and then
only if we get the second phase of funding. However, if
you are interested in beta testing, then you can send a
message to mpidl-users@txcorp.com and we'll discuss it.

Cheers,
David

Miska Le Louarn <lelouarn@eso.org> wrote in message news:<3C428D26.1080405@eso.org>...
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