
Subject: Re: load sharing on multiple machines?

Posted by [Mark Rivers](#) on Thu, 17 Jan 2002 04:07:44 GMT

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Mike Miller <mmiller3@iupui.edu> wrote in message
news:yaghepmncy4.fsf@iupui.edu...

> Dear IDL'ers,

>

> I'm a new IDL user and I've got some image reconstruction tasks
> that are done on a slice-by-slice basis. I think that this will
> make it simple for me to run IDL programs on several different
> machines, each doing a subset of the slices, so that overall
> processing time will be reduced. I've got a stack of Linux PCs
> and some shiny new windows 2000 PCs to do this on. These windows
> machines run at 1.8 GHz and I'd like to take advantage of all the
> wasted cycles that aren't needed when the users are doing their
> email and text processing.

>

> Does anyone out there have any experience or suggestions on ways
> to implement this? I can work it out with scripts on the linux
> boxes, but I'm at a loss for how to do it with the windows
> machines. Is it even possible to work them into the mix?
> (without turning them into Linux boxes that is...)

I am doing tomography reconstruction that sounds similar to what you want to do. I am currently running on a single Windows machine, but with dual-CPU's. Both IDL and the Intel Math Kernel Library that I use for FFT-based reconstruction take advantage of both CPU's.

I have thought about what you are trying to do, use multiple machines, but have not done it yet.

Here are some possible approaches:

- One IDL process on one machine is the "master" and sends jobs to be run on other "server" machines. This could be accomplished by writing a file on the server, which IDL on that server is waiting to read. It could also be accomplished by running a server task each the server machine that listens for socket connections from the IDL master. IDL has a socket client interface.
- You could use MPI to parallelize the reconstruction. There is a group at Argonne who have this running on Windows machines for tomography reconstruction. Contact Francesco De Carlo (decarlo@aps.anl.gov) for more information. This is not using IDL, but I think IDL could be interfaced to it.

You might be interested in my Web page:

<http://cars.uchicago.edu/software/tomography.html>

This describes the IDL software that I've written for tomography

reconstruction, including a new GUI interface to control it.

Mark Rivers

Subject: Re: load sharing on multiple machines?

Posted by [Pavel A. Romashkin](#) on Thu, 17 Jan 2002 17:36:15 GMT

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I admire your courage - starting in a new language right off with multithreading and clustering.

Sorry, I wish I could be of more help. But I am not ambitious enough to be useful :-(

Do a Google search though. There were a few threads on this, some even with solutions, in 2000.

Good luck,

Pavel

Mike Miller wrote:

>

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> that are done on a slice-by-slice basis. I think that this will

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> machines...t

Subject: Re: load sharing on multiple machines?

Posted by [mmiller3](#) on Thu, 17 Jan 2002 19:46:53 GMT

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Thanks for the feedback, Mark. Our main systems also have dual-CPU slots, although we haven't yet filled the second one.

Do you have any ball-park numbers for how much IDL performance improvement you see when you use two instead of one processors?

Mike

Subject: Re: load sharing on multiple machines?

Posted by [Mark Rivers](#) on Fri, 18 Jan 2002 04:34:19 GMT

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Michael A. Miller <mmiller3@iupui.edu> wrote in message news:87sn9469qq.fsf@lumen.med.iupui.edu...

> Thanks for the feedback, Mark. Our main systems also have

> dual-CPU slots, although we haven't yet filled the second one.

> Do you have any ball-park numbers for how much IDL performance

> improvement you see when you use two instead of one processors?

I just ran a test on Linux

```
IDL> a = findgen(1000,1000)
```

```
IDL> b = findgen(1000,1000)+1.
```

```
IDL> for i=0,1000 do c=a/b
```

I monitored the system performance with "top". Both CPUs went from 1% busy to 100% busy, indicating that IDL is using both CPUs effectively.

On the other hand:

```
IDL> for i=0,100 do c=fft(a,1)
```

the sum of the 2 CPUs busy was about 120%, indicating that it's not using both CPUs very well.

My observations on Windows are consistent with this, some operations fully utilize both CPUs, some don't.

Mark

Subject: Re: load sharing on multiple machines?

Posted by [Craig Markwardt](#) on Fri, 18 Jan 2002 15:33:37 GMT

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"Mark Rivers" <rivers@cars.uchicago.edu> writes:

> Michael A. Miller <mmiller3@iupui.edu> wrote in message

> news:87sn9469qq.fsf@lumen.med.iupui.edu...

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> both CPUs very well.

I recall reading the What's New document for IDL 5.5, which says that

some mathematical operations can become multi-threaded, and hence use multiple CPUs. I suspect that this is much more difficult to implement for the FFT, so it isn't. Of course, this only applies to IDL 5.5.

Craig

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Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
