Re: Dual−core CPU vs. very large cache

Source: http://unix.derkeiler.com/Mailing−Lists/FreeBSD/performance/2006−04/msg00025.html

- *From*: Eric Anderson <anderson@xxxxxxxxxxxx>
- *Date*: Tue, 25 Apr 2006 12:54:56 −0500

Shane Ambler wrote:

> On 25/4/2006 22:37, "Bill Moran" <wmoran@xxxxxxxxxxxxxxxxxxxxxxx> wrote:
>
> > [First off, the list archives for this list don't seem to be
> > searchable. I get the following error:
> > Unable to read document excerpts
> > '/usr/local/mailman/archives/private/freebsd−performance/htdig/db.excerpts'
> > Did you run htdig?]
> >
> > So ... on to the question.
> >
> > We have some database servers that we're looking to replace with
> > beefier hardware, mainly because we're expecting our customer base
> > to grow a lot in the near future.
> >
> > The current hw is Dell 2850 servers. These are dual proc (each proc
> > is hyperthreaded) with Dell PERC controllers driving 4 SCSI−320
> > disks in a RAID−10.
> >
> > We're doing our best to simulate high−load in the lab, and the
> > database consistently bottlenecks on CPU usage. I'm assuming that
> > the combination of plenty of RAM and high−speed disks has led to
> > the CPU being the slowest part of the system.
> >
> > We're considering two alternatives for the newer hardware:
> > 1) Intel HT CPUs with 8M cache
> > 2) Intel dual−core procs
> >
> > Our current Dells have 2M cache, and I'm trying to determine whether
> > the 8M cache will make a significant difference or not. Can someone
> > recommend a testing procedure for determining whether adding cache is
> > worthwhile or not? I can simulate a test load at any time, but I
> > don't know how to tell whether the cache is the bottleneck of the
> > CPU or not.
>
> Cache helps speed things up by keeping code/data in faster memory − this

helps speed things up when the same code/data is used repeatedly.

> From the info you have given I am guessing that you have
> many users who are

loading the system up to capacity and that the database is fairly large
(a few Gig).
On that premise I would recommend the dual core CPU's (two or more dual core
xeon's − not P4's) − it sounds like they would be working with more data
than would be kept in cache so the extra cache wouldn't increase performance
a great deal and with many users loading the system the more cpu's of the
dual cores cpu's would allow more requests to be processed at the same time.

We've done extensive testing of dual−core systems here with different cpu bound processes, and have found out over and over that increasing the cache helps much more for cpu bound processes than dual core. If anything, get two single core processors with the 8M cache on them.

Also, make sure that your database is set up with indexes correctly and is pruned (if that needs to be done for your database server).

Eric

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Anything that works is better than anything that doesn't.
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