Subject: Re: AMD CPU - (pentium way faster)
Posted by Robert Stockwell on Thu, 31 Jan 2002 15:47:50 GMT
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Robert Stockwell wrote:

> Brian Jackel wrote:
>
>> Hmmm, interesting.
>>
>> We just got a 1.6Ghz AMD and 1.2Ghz Pentium. Both running Windows2000
>> Professional. The
>> STREAM benchmarks (http://www.cs.virginia.edu/stream/)
>> claim that the AMD is *much* faster, while
>> IDL timetests indicate only a slight advantage
>> for the AMD.
>> I wonder what's up with the Linux version?
>>
>> Brian
>>
>

Ok, here are my current numbers comparing IDLDE 5.5 on:
1) 1.4 ghz Athlon 512Mram (Desktop) running Redhat 7.2 Linux
and the KDE desktop
2) 1.13Ghz Pentium III 512Ram (Laptop) running Windows2000 SP2

These were all averaged repeated runs, no "compile time".

Time_test.pro
1 (1.4Ghz Athlon) = 0.78 seconds
2 (1.1Ghz pentium) = 0.63 seconds

Time_test2.pro
1 (1.4Ghz Athlon) = 2.00 seconds
2 (1.1Ghz pentium) = 1.64 seconds

So, the athlon is .78/.63 = 23% slower,
or 2/1.64 = 21% slower.

Of course, clock down the athlon to 1.13 ghz
and the time is 2.00*1.4/1.13 = 2.47 seconds,
and the percent slowness would be
2.46/1.64 = 50% slower.

YIKES!

and this is after my sys admin promised that the Athlon
1.4ghx would be much faster than the 1.8Ghz pentium I was
GOING TO BUY, until he talked me out of it. Such is life
on the cutting edge.

Anyone else see speed differences in IDL on windows vs linux,
or on pentium vs athlon? Or am I anomalous, cause if its just me, I'll
start looking at the memory I have and other hardware reasons for
the slow athlon.

Cheers,
bob

Subject: Re: AMD CPU - (pentium way faster)
Posted by Pavel A. Romashkin on Thu, 31 Jan 2002 17:56:24 GMT
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This is an OS test, not processor test. I am sure the G4 chip on the Mac
would perform very differently if I ran IDL under Classic, OSX or PPC Linux.
Pavel

Robert Stockwell wrote:
>
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> and the KDE desktop
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>

Subject: Re: AMD CPU - (pentium way faster)
Posted by Brian Jackel on Thu, 31 Jan 2002 19:23:23 GMT
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Hi Bob

I ran the same tests using IDL 5.4 on three machines here

3) 1.6 Ghz Athlon (512 Mbytes ram)
4) 1.2 Ghz Pentium (1 Gbyte ram)
5) 2 x 600 Mhz Pentium (512 Mbytes ram)

all under Win2000 professional with the latest updates.
Results were obtained by compiling, throwing out the first
few results, then averaging four.

Time_test.pro
3) 0.641
4) 0.683
5) 2.03

Time_test2.pro
3) 1.67
4) 1.80
5) 5.14

So the Athlon is fastest, but not by the clock speed multiplier.
Also, dual processors don't buy you anything when running a
single copy of IDL. Maybe that'll improve with the newer threaded
versions.

Why is Bob's Linux/Athlon combination so slow? Do RSI link to a
particularly bad numerical library? I'd really like to know
what's going on here. My long term plan is to migrate from Windows
to Linux, but I'm not keen on a 50% degredation in effective
processing power.

Brian

Robert Stockwell wrote:
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> Anyone else see speed differences in IDL on windows vs linux,
> or on pentium vs athlon? Or am I anomalous, cause if its just me, I'll
> start looking at the memory I have and other hardware reasons for
> the slow athlon.
>
> Cheers,
> bob

Subject: Re: AMD CPU - (pentium way faster)
Posted by Mark Hadfield on Thu, 31 Jan 2002 20:39:14 GMT
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"Brian Jackel" <bjackel@phys.ucalgary.ca> wrote in message
news:3C5999AB.5DACDD1F@phys.ucalgary.ca...

> Why is Bob's Linux/Athlon combination so slow? Do RSI link to a
> particularly bad numerical library? I'd really like to know what's
> going on here. My long term plan is to migrate from Windows to
> Linux, but I'm not keen on a 50% degredation in effective processing
> power.

I have been comparing Linux & Windows 2000 on the same machine:
Pentium 3 800 MHz, 384 MB RAM. Linux wins the time_test2 comparison by
about 10 % (though Windows tries to cheat on the geometric mean by
recording a zero time for one of the tests).

However, as I reported in another thread, Linux is definitely slower
overall at object graphics, and 8 times (!) slower at a
surface-animation application that is fairly typical of my usage of
IDL. The reasons for this are still being investigated...

So, before you migrate, you should check it out for yourself. (But you
knew that didn't you?)

Mark Hadfield
m.hadfield@niwa.co.nz http://katipo.niwa.co.nz/~hadfield
National Institute for Water and Atmospheric Research

Subject: Re: AMD CPU - (pentium way faster)
Posted by Robert Stockwell on Thu, 31 Jan 2002 22:19:29 GMT
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Brian Jackel wrote:

> Hi Bob
>
> I ran the same tests using IDL 5.4 on three machines here
>
> 3) 1.6 Ghz Athlon (512 Mbytes ram)
> 4) 1.2 Ghz Pentium (1 Gbyte ram)
> 5) 2 x 600 Mhz Pentium (512 Mbytes ram)
>
> all under Win2000 professional with the latest updates.
> Results were obtained by compiling, throwing out the first

> few results, then averaging four.
>
> Time_test.pro
> 3) 0.641
> 4) 0.683
> 5) 2.03
>
> Time_test2.pro
> 3) 1.67
> 4) 1.80
> 5) 5.14
>

I retract my statement that pentiums are faster.
Rather win2000 runs IDL faster than linux runs IDL.
Also, the 50% number I threw out there is too high,
(due to faster cache, memory etc), and the number
should be ~20%.

Do you have any linux systems or better yet, dual boot?

Here is the data on a dual boot computer I just tested
(this is also posted in another message):

Both trials are running idl 5.5 (in demo mode, we don't have a license on it)
I ran the time tests about 15 time each, and took an average
(after it read from file and compiled the code)
the computer: 1.4 Ghz AMD athlon, 512 Ram.

OS 1) Win2000 SP 2
    Average time for time_test.pro = 0.596 seconds
OS 2) Slackware 8 2.4.17 kernel with X3864.1 running fvw2
    Average time for time_test.pro = 0.725 seconds
0s 3) Slackware 8 2.4.17 kernel with no xwindows (i.e. command line only)
    Average time for time_test.pro = 0.721 seconds

So, that is .725/.596 = 23.5% longer on linux.
(and the command line version is slightly quicker, probably in
printing out the 10 or twnety lines of text)

Cheers,
bob

Subject: Re: AMD CPU - (pentium way faster)
Posted by Robert Stockwell on Thu, 31 Jan 2002 23:13:19 GMT
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Mark Hadfield wrote:

> "Brian Jackel" <bjackel@phys.ucalgary.ca> wrote in message
> news:3C5999AB.5DACDD1F@phys.ucalgary.ca...
>
>
>> Why is Bob's Linux/Athlon combination so slow? Do RSI link to a
>> particularly bad numerical library? I'd really like to know what's
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>> Linux, but I'm not keen on a 50% degredation in effective processing
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>
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> Pentium 3 800 MHz, 384 MB RAM. Linux wins the time_test2 comparison by
> about 10 % (though Windows tries to cheat on the geometric mean by
> recording a zero time for one of the tests).

Hmmm the exact opposite of my machine (win2000 is faster than linux).
What flavour of Linux was it? Also, what IDL version?

Cheers,
bob

Subject: Re: AMD CPU - (pentium way faster)
Posted by Mark Hadfield on Fri, 01 Feb 2002 00:36:12 GMT
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"Robert Stockwell" <rgs1967@hotmail.com> wrote in message
news:3C59CF8F.60804@hotmail.com...
> Mark Hadfield wrote:
>> I have been comparing Linux & Windows 2000 on the same machine:
>> Pentium 3 800 MHz, 384 MB RAM. Linux wins the time_test2 comparison by
>> about 10 % (though Windows tries to cheat on the geometric mean by
>> recording a zero time for one of the tests).
>
> Hmmm the exact opposite of my machine (win2000 is faster than linux).

> What flavour of Linux was it? Also, what IDL version?

Before I answer those questions, below my sig are output files from time_test3. This is, I think, the best of the time_test family to use on modern machines. You will see that Linux and Windows are very close; Windows wins by a narrow margin on geometric mean whereas Linux wins by a narrow margin on geometric mean. There's some interesting variation in relative performance between the test. Procedure was to run time_test3 several times on a lightly loaded machine until results stabilised.

Configuration: Compaq DeskPro EN, Pentium 3 800 MHz, 384 MiB RAM, IDL 5.5 (using IDLDE on both machines), Windows 2000 vs RedHat Linux 7.2 with kernel 2.4.7-10.

Mark Hadfield
m.hadfield@niwa.co.nz http://katipo.niwa.co.nz/~hadfield
National Institute for Water and Atmospheric Research

```
; IDL Version 5.5 (linux x86)
; Journal File for hadfield@hadfield
; Working directory: /home/hadfield/idl/mghlib/_Motley
; Date: Fri Feb  1 13:08:31 2002
time_test3
;|TIME_TEST3 performance for IDL 5.5:
;|       OS_FAMILY=unix, OS=linux, ARCH=x86
;| Fri Feb  1 13:08:34 2002
;       1     0.105139 Empty For loop, 2000000 times
;       2     0.103525 Call empty procedure (1 param) 100000 times
;       3     0.127712 Add 200000 integer scalars and store
;       4     0.119736 50000 scalar loops each of 5 ops, 2 =, 1 if)
;       5     0.148752 Mult 512 by 512 byte by constant and store, 30 times
;       6     0.896322 Shift 512 by 512 byte and store, 300 times
;       7     0.501356 Add constant to 512x512 byte array, 100 times
;       8     0.494077 Add two 512 by 512 byte arrays and store, 80 times
;       9     0.404303 Mult 512 by 512 floating by constant, 30 times
;      10     0.677836 Shift 512 x 512 array, 60 times
;      11     0.667641 Add two 512 by 512 floating images, 40 times
;      12     0.164803 Generate 1000000 random numbers
;      13    0.0913930 Invert a 192^2 random matrix
;      14    0.0264250 LU Decomposition of a 192^2 random matrix
;      15     0.128462 Transpose 384^2 byte, FOR loops
;      16     0.175594 Transpose 384^2 byte, row and column ops x 10
;      17     0.307561 Transpose 384^2 byte, TRANSPOSE function x 100
;      18     0.125423 Log of 100000 numbers, FOR loop
;      19     0.155121 Log of 100000 numbers, vector ops 10 times
;      20     0.433018 131072 point forward plus inverse FFT
;      21     0.188205 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
```

```
;      22     0.111943 Smooth 512 by 512 floating array, 5x5 boxcar, 5 times
;      23     0.295521 Write and read 512 by 512 byte array x 40
;      6.44987=Total Time,       0.20485736=Geometric mean,      23 tests.

; IDL Version 5.5, Microsoft Windows (Win32 x86)
; Journal File for hadfield@HADFIELD
; Working directory: C:\Documents and Settings\hadfield
; Date: Fri Feb 01 12:43:36 2002
time_test3
;|TIME_TEST3 performance for IDL 5.5:
;|       OS_FAMILY=Windows, OS=Win32, ARCH=x86
;| Fri Feb 01 12:44:59 2002
;       1    0.0780001 Empty For loop, 2000000 times
;       2    0.0630000 Call empty procedure (1 param) 100000 times
;       3    0.0940000 Add 200000 integer scalars and store
;       4    0.0780001 50000 scalar loops each of 5 ops, 2 =, 1 if)
;       5     0.109000 Mult 512 by 512 byte by constant and store, 30 times
;       6      1.01500 Shift 512 by 512 byte and store, 300 times
;       7     0.359000 Add constant to 512x512 byte array, 100 times
;       8     0.438000 Add two 512 by 512 byte arrays and store, 80 times
;       9     0.469000 Mult 512 by 512 floating by constant, 30 times
;      10     0.844000 Shift 512 x 512 array, 60 times
;      11     0.891000 Add two 512 by 512 floating images, 40 times
;      12    0.0940000 Generate 1000000 random numbers
;      13    0.0780001 Invert a 192^2 random matrix
;      14    0.0159999 LU Decomposition of a 192^2 random matrix
;      15     0.109000 Transpose 384^2 byte, FOR loops
;      16     0.125000 Transpose 384^2 byte, row and column ops x 10
;      17     0.266000 Transpose 384^2 byte, TRANSPOSE function x 100
;      18    0.0930001 Log of 100000 numbers, FOR loop
;      19     0.157000 Log of 100000 numbers, vector ops 10 times
;      20     0.468000 131072 point forward plus inverse FFT
;      21     0.172000 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
;      22    0.0940000 Smooth 512 by 512 floating array, 5x5 boxcar, 5 times
;      23     0.625000 Write and read 512 by 512 byte array x 40
;      6.73500=Total Time,       0.17893937=Geometric mean,      23 tests.
```

Subject: Re: AMD CPU - (pentium way faster)
Posted by Richard French on Fri, 01 Feb 2002 01:01:34 GMT

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Here's another one for the pot - SunBlade1000.
What's interesting is that the floating pt operations seem really
fast compared to the other benchmarks shown, but the looping tests
are not any faster. Comments from those who know about these CPUs?
Dick French

```
IDL> time_test3
|TIME_TEST3 performance for IDL 5.5:
|       OS_FAMILY=unix, OS=sunos, ARCH=sparc
|       Thu Jan 31 19:57:47 2002
      1     0.185932 Empty For loop, 2000000 times
      2     0.107824 Call empty procedure (1 param) 100000 times
      3     0.129075 Add 200000 integer scalars and store
      4     0.118094 50000 scalar loops each of 5 ops, 2 =, 1 if)
      5     0.102571 Mult 512 by 512 byte by constant and store, 30
times
      6     0.306812 Shift 512 by 512 byte and store, 300 times
      7     0.168105 Add constant to 512x512 byte array, 100 times
      8     0.194526 Add two 512 by 512 byte arrays and store, 80 times
      9    0.0596820 Mult 512 by 512 floating by constant, 30 times
     10    0.0806381 Shift 512 x 512 array, 60 times
     11     0.111282 Add two 512 by 512 floating images, 40 times
     12     0.166002 Generate 1000000 random numbers
     13     0.107743 Invert a 192^2 random matrix
     14    0.0361811 LU Decomposition of a 192^2 random matrix
     15     0.171751 Transpose 384^2 byte, FOR loops
     16     0.131389 Transpose 384^2 byte, row and column ops x 10
     17     0.250274 Transpose 384^2 byte, TRANSPOSE function x 100
     18     0.160186 Log of 100000 numbers, FOR loop
     19     0.237714 Log of 100000 numbers, vector ops 10 times
     20    0.0939361 131072 point forward plus inverse FFT
     21     0.245218 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
     22    0.0548640 Smooth 512 by 512 floating array, 5x5 boxcar, 5
times
     23    0.0700099 Write and read 512 by 512 byte array x 40
     3.28981=Total Time,       0.12610411=Geometric mean,      23
tests.
```