
Subject: IDL time test with a PowerMac G4
Posted by [gurman](#) on Mon, 04 Oct 1999 07:00:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

Running IDL 5.2 without any special Velocity Engine (AltiVec) plugins or other mods, a G4/450 running Mac OS 8.6 with 128 Mbyte of memory and a 20 Gbyte Western Digital (stock) Ultra ATA hard drive gets the following results on time_test2:

```
IDL> time_test2
|TIME_TEST2 performance for IDL 5.2:
|   OS_FAMILY=MacOS, OS=MacOS, ARCH=PowerMac
| Mon Oct  4 15:36:29 1999
|   1   0.400000 Empty For loop,    2000000 times
|   2   0.166667 Call empty procedure (1 param) 100,000 times
|   3   0.066667 Add 100,000 integer scalars and store
|   4   0.083334 25,000 scalar loops each of 5 ops, 2 =, 1 if)
|   5   0.016667 Mult 512 by 512 byte by constant and store, 10 times
|   6   0.050000 Shift 512 by 512 byte and store, 100 times
|   7   0.083334 Add constant to 512 x 512 byte array and store, 50 times
|   8   0.116667 Add two 512 by 512 byte images and store, 30 times
|   9   0.266667 Mult 512 by 512 floating by constant and store, 30 times
|  10   0.133333 Add constant to 512 x 512 floating and store, 40 times
|  11   0.666667 Add two 512 by 512 floating images and store, 30 times
|  12   0.0500001 Generate 225000 random numbers
|  13   0.0666666 Invert a 150 by 150 random matrix
|  14   0.0166667 LU Decomposition of a 150 by 150 random matrix
|  15   0.116667 Transpose 256 x 256 byte, FOR loops
|  16   0.116667 Transpose 256 x 256 byte, row and column ops x 10
|  17   0.0166668 Transpose 256 x 256 byte, TRANSPOSE function x 10
|  18   0.200000 Log of 100,000 numbers, FOR loop
|  19   0.0333333 Log of 100,000 numbers, vector ops
|  20   0.150000    131072 point forward plus inverse FFT
|  21   0.183333 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
|  22   0.0166667 Smooth 512 by 512 floating array, 5x5 boxcar, 2 times
|  23   1.71667 Write and read 512 by 512 byte array x 20
|  4.73333=Total Time,    0.096772401=Geometric mean,    23 tests.
```

For comparison, a similarly equipped (6 Gbyte hard drive, 512 Mbyte memory) Power Mac G3/350 gets:

```
IDL> time_test2
|TIME_TEST2 performance for IDL 5.2:
|   OS_FAMILY=MacOS, OS=MacOS, ARCH=PowerMac
| Mon Oct  4 15:22:46 1999
|   1   0.633333 Empty For loop,    2000000 times
|   2   0.200000 Call empty procedure (1 param) 100,000 times
|   3   0.083334 Add 100,000 integer scalars and store
```

```

4 0.0833333 25,000 scalar loops each of 5 ops, 2 =, 1 if)
5 0.0333334 Mult 512 by 512 byte by constant and store, 10 times
6 0.1333333 Shift 512 by 512 byte and store, 100 times
7 0.116667 Add constant to 512 x 512 byte array and store, 50 times
8 0.266667 Add two 512 by 512 byte images and store, 30 times
9 0.450000 Mult 512 by 512 floating by constant and store, 30 times
10 0.433333 Add constant to 512 x 512 floating and store, 40 times
11 0.950000 Add two 512 by 512 floating images and store, 30 times
12 0.0500001 Generate 225000 random numbers
13 0.133333 Invert a 150 by 150 random matrix
14 0.0333333 LU Decomposition of a 150 by 150 random matrix
15 0.133333 Transpose 256 x 256 byte, FOR loops
16 0.183333 Transpose 256 x 256 byte, row and column ops x 10
17 0.0666667 Transpose 256 x 256 byte, TRANSPOSE function x 10
18 0.283333 Log of 100,000 numbers, FOR loop
19 0.0500001 Log of 100,000 numbers, vector ops
20 0.300000 131072 point forward plus inverse FFT
21 0.233333 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
22 0.0500001 Smooth 512 by 512 floating array, 5x5 boxcar, 2 times
23 3.05000 Write and read 512 by 512 byte array x 20
7.95000=Total Time, 0.16647963=Geometric mean, 23 tests.

```

To bracket the G4 performance from the other side, a Compaq XP1000 with a 500 MHz Alpha EV67, 768 Mbyte of memory, and running Tru64 UNIX 4.0F gets:

```

IDL> time_test2
|TIME_TEST2 performance for IDL 5.2:
| OS_FAMILY=unix, OS=OSF, ARCH=alpha
| Mon Oct 4 21:29:19 1999
1 0.194336 Empty For loop, 2000000 times
2 0.115235 Call empty procedure (1 param) 100,000 times
3 0.0703120 Add 100,000 integer scalars and store
4 0.0673831 25,000 scalar loops each of 5 ops, 2 =, 1 if)
5 0.0419919 Mult 512 by 512 byte by constant and store, 10 times
6 0.0419930 Shift 512 by 512 byte and store, 100 times
7 0.172851 Add constant to 512 x 512 byte array and store, 50 times
8 0.121094 Add two 512 by 512 byte images and store, 30 times
9 0.0996090 Mult 512 by 512 floating by constant and store, 30 times
10 0.0390630 Add constant to 512 x 512 floating and store, 40 times
11 0.186524 Add two 512 by 512 floating images and store, 30 times
12 0.0292970 Generate 225000 random numbers
13 0.0771489 Invert a 150 by 150 random matrix
14 0.0205071 LU Decomposition of a 150 by 150 random matrix
15 0.0898440 Transpose 256 x 256 byte, FOR loops
16 0.0673831 Transpose 256 x 256 byte, row and column ops x 10
17 0.00781202 Transpose 256 x 256 byte, TRANSPOSE function x 10
18 0.176758 Log of 100,000 numbers, FOR loop
19 0.00976598 Log of 100,000 numbers, vector ops

```

20 0.243165 131072 point forward plus inverse FFT
21 0.113281 Smooth 512 by 512 byte array, 5x5 boxcar, 10 times
22 0.0361329 Smooth 512 by 512 floating array, 5x5 boxcar, 2 times
23 0.0664070 Write and read 512 by 512 byte array x 20
2.08789=Total Time, 0.066015022=Geometric mean, 23 tests.

Considering the base price of the G4 (~ \$2300) is a factor of four less than the base price of the XP1000 (~ \$10K), the performance is none too shabby. And you can't play Bugdom on the Alpha. ;-)

Joe Gurman

--

| Joseph B. Gurman, NASA Goddard Space Flight Center, Solar Physics
| Branch, Greenbelt MD 20771 USA / Federal employees are still
| prohibited from holding opinions while at work. Therefore, any
| opinions expressed herein are somebody else's.

Subject: Re: IDL time test with a PowerMac G4
Posted by [mgs](#) on Sun, 10 Oct 1999 07:00:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

In article <gurman-0810992114570001@gurman.ari.net>, gurman@gsfc.nasa.gov (Joseph B. Gurman) wrote:

> (In fact, the disk write is the only real loser for the G4 --- without it,
> the time total is 3.0 s for the G4 vs. 3.8 s for the PIII.)

...

> I suspect the
> disk I/O is still partly 68K code, thus the pokeyness.

The Mac I/O is pathetically slow. It's hard to believe we're still seeing these kinds of processing times for I/O. I've tested IDL under Virtual PC (MS Windows 95 via an emulator) and received better I/O scores under emulation than natively on the Mac. Someone at Apple needs to have the crap slapped out of them for allowing this to continue.

> Wait 'til January (when, of course, there will be 700 MHz PIII's, 750
> MHz K-7's, and at least samples of 1.3 GHz Alphas). I suspect the
> AltiVec-optimized IDL will pull some numbers way down.

What I think we really need to see is some form of IDL running on one of the UNIX's for the PPC processor. With that we could compare very similar OS's across different processors. I make it a point to ask RSI about it every couple of months, but haven't heard anything affirmative, yet. I hope RSI is going to develop IDL for MacOS X (server and client).

--

Mike Schienle
mgs@ivsoftware.com
<http://www.ivsoftware.com/>

Interactive Visuals, Inc.
Remote Sensing and Image Processing
Analysis and Application Development
