**Intel Corporation**

Intel DQ87PG motherboard (Intel Core i5-4440)

<table>
<thead>
<tr>
<th>SPECint®_rate2006 = 147</th>
<th>SPECint_rate_base2006 = 137</th>
</tr>
</thead>
</table>

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Core i5-4440</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>3100</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>4 cores, 1 chip, 4 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>6 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>4 GB (2 x 2 GB 1Rx8 PC3-12800U-11)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>250 GB Seagate SATA HDD, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Microsoft Windows 7 Enterprise 6.1.7601 Service Pack 1 Build 7601</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 13.1.1.171 of Intel C++ Studio XE for Windows; Libraries: Version 16.00.30319.01 of Microsoft Visual Studio 2010 Professional SP1</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>NTFS</td>
</tr>
<tr>
<td>System State:</td>
<td>Default</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software:</td>
<td>SmartHeap Library Version 10.0 from <a href="http://www.microquill.com/">http://www.microquill.com/</a></td>
</tr>
</tbody>
</table>
Intel Corporation

Intel DQ87PG motherboard (Intel Core i5-4440)

SPECint_rate2006 = 147
SPECint_rate_base2006 = 137

CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds/Base</th>
<th>Ratio</th>
<th>Seconds/Base</th>
<th>Ratio</th>
<th>Seconds/Base</th>
<th>Ratio</th>
<th>Seconds/Base</th>
<th>Ratio</th>
<th>Seconds/Base</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>4</td>
<td>343/114</td>
<td>343/114</td>
<td>348/112</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>401.bzip2</td>
<td>4</td>
<td>616/62.8</td>
<td>567/68.0</td>
<td>613/62.8</td>
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<td></td>
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<tr>
<td>403.gcc</td>
<td>4</td>
<td>300/107</td>
<td>301/107</td>
<td>295/109</td>
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<td>429.mcf</td>
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<td>383/95.2</td>
<td>356/102</td>
<td>379/96.4</td>
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<td>445.gobmk</td>
<td>4</td>
<td>434/96.4</td>
<td>435/96.4</td>
<td>436/96.4</td>
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<tr>
<td>456.hmmer</td>
<td>4</td>
<td>177/210</td>
<td>178/209</td>
<td>178/210</td>
<td></td>
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<tr>
<td>458.sjeng</td>
<td>4</td>
<td>442/110</td>
<td>443/108</td>
<td>442/110</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>462.libquantum</td>
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<td>57.5</td>
<td>1440</td>
<td>57.3</td>
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</tr>
<tr>
<td>464.h264ref</td>
<td>4</td>
<td>442/200</td>
<td>444/200</td>
<td>443/200</td>
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<tr>
<td>471.omnetpp</td>
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<td>345/72.4</td>
<td>346/72.4</td>
<td>371/67.6</td>
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<tr>
<td>473.astar</td>
<td>4</td>
<td>369/76.0</td>
<td>369/76.0</td>
<td>373/75.2</td>
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<tr>
<td>483.xalancbmk</td>
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<td>160/172</td>
<td>161/172</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Compiler Invocation Notes

To compile these binaries, the Intel Compiler 13.1 was set up to generate 32-bit binaries with the command:
"ipsxe-comp-vars.bat ia32 vs2010" (shortcut provided in the Intel(r) Parallel Studio XE 2013 program folder)

Submit Notes

Processes were bound to specific processors using the start command with the /affinity switch. The config file option "submit" was used to generate the affinity mask for each process.

Platform Notes

Sysinfo program C:\SPEC13.1\Docs\sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ \8787f7622badcf24e01c368b1db4377c
running on Clt7C05070FB2B7 Sat Sep 21 22:24:13 2013

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

Trying 'systeminfo'
OS Name       : Microsoft Windows 7 Enterprise
OS Version    : 6.1.7601 Service Pack 1 Build 7601
System Manufacturer: INTEL_
System Model  : DQ87PG_
Processor(s)  : 1 Processor(s) Installed.

Continued on next page
Intel Corporation

Intel DQ87PG motherboard (Intel Core i5-4440)

SPEC_int_rate2006 = 147
SPEC_int_rate_base2006 = 137

CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Test date: Sep-2013
Hardware Availability: Sep-2013
Software Availability: Apr-2013

Platform Notes (Continued)

[01]: Intel64 Family 6 Model 60 Stepping 3 GenuineIntel ~3101 Mhz
Total Physical Memory: 3,749 MB

Trying 'wmic cpu get /value'
DeviceID : CPU0
L2CacheSize : 1024
L3CacheSize : 6144
MaxClockSpeed : 3101
Name : Intel(R) Core(TM) i5-4440 CPU @ 3.10GHz
NumberOfCores : 4
NumberOfLogicalProcessors: 4

(End of data from sysinfo program)
BIOS: SATA mode set to RAID
Windows Disk Driver: Intel Rapid Storage Technology 12.5.0.1066
Windows Chipset Driver: Intel Chipset Driver 9.4.0.1027

Component Notes

Tested systems can be used with Shin-G ATX case,
PC Power and Cooling 1200W power supply
Micron MT8JTF25664AZ-1G6 Series Memory DIMMs

General Notes

Binaries compiled on a system with 1x Intel Core i7-860 CPU
+ 8GB memory using Windows 7 Enterprise 64-bit

Base Compiler Invocation

C benchmarks:
  icl -Qvc10 -Qstd=c99

C++ benchmarks:
  icl -Qvc10

Base Portability Flags

  403.gcc: -DSPEC_CPU_WIN32
  464.h264ref: -DWIN32 -DSPEC_CPU_NO_INTTYPES
  483.xalancbmk: -Qoption, cpp, --no_wchar_t_keyword
Intel Corporation
Intel DQ87PG motherboard (Intel Core i5-4440)

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Base Optimization Flags

C benchmarks:
- `-QxCORE-AVX2 -Qipo -O3 -Qprec-div -Qopt-prefetch /F512000000`

C++ benchmarks:
- `-QxCORE-AVX2 -Qipo -O3 -Qprec-div -Qopt-prefetch -Qcxx-features /F512000000 shlW32M.lib -link /FORCE:MULTIPLE`

Base Other Flags

C benchmarks:
- `403.gcc: -Dalloca=_alloca`

Peak Compiler Invocation

C benchmarks (except as noted below):
```bash
icl -Qvc10 -Qstd=c99
```

456.hmmer: C:\Program Files (x86)\Intel\Composer XE 2013.171/bin/intel64/icl.exe
458.sjeng: C:\Program Files (x86)\Intel\Composer XE 2013.171/bin/intel64/icl.exe
462.libquantum: C:\Program Files (x86)\Intel\Composer XE 2013.171/bin/intel64/icl.exe

C++ benchmarks (except as noted below):
```bash
icl -Qvc10
```

473.astar: C:\Program Files (x86)\Intel\Composer XE 2013.171/bin/intel64/icl.exe

Peak Portability Flags

403.gcc: -DSPEC_CPU_WIN32
456.hmmer: -DSPEC_CPU_P64
458.sjeng: -DSPEC_CPU_P64
462.libquantum: -DSPEC_CPU_P64
464.h264ref: -DW264 -DSPEC_CPU_NO_INTPC
473.astar: -DSPEC_CPU_P64
483.xalancbmk: -Qoption,cpp,--no_wchar_t_keyword
SPEC CINT2006 Result
Intel Corporation
Intel DQ87PG motherboard (Intel Core i5-4440)
Intel Corporation

Intel DQ87PG motherboard (Intel Core i5-4440)

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CPU2006 license: 13
Test sponsor: Intel Corporation
Tested by: Intel Corporation

Test date: Sep-2013
Hardware Availability: Sep-2013
Software Availability: Apr-2013

Peak Other Flags (Continued)

403.gcc: -Dalloca=_alloca

456.hmmer: -link -LIBPATH:C:\Program Files (x86)\Intel\Composer XE 2013.171/compiler/lib/intel64
-link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib/AMD64
-link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib
-link -LIBPATH:C:/Program Files (x86)/Microsoft SDKs/Windows/v7.0A/lib/x64

458.sjeng: -link -LIBPATH:C:\Program Files (x86)\Intel\Composer XE 2013.171/compiler/lib/intel64
-Link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib/AMD64
-Link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib
-Link -LIBPATH:C:/Program Files (x86)/Microsoft SDKs/Windows/v7.0A/lib/x64

462.libquantum: -link -LIBPATH:C:\Program Files (x86)\Intel\Composer XE 2013.171/compiler/lib/intel64
-Link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib/AMD64
-Link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib
-Link -LIBPATH:C:/Program Files (x86)/Microsoft SDKs/Windows/v7.0A/lib/x64

C++ benchmarks:

473.astar: -link -LIBPATH:C:\Program Files (x86)\Intel\Composer XE 2013.171/compiler/lib/intel64
-Link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib/AMD64
-Link -LIBPATH:C:/Program Files (x86)/Microsoft Visual Studio 10.0/VC/lib
-Link -LIBPATH:C:/Program Files (x86)/Microsoft SDKs/Windows/v7.0A/lib/x64

The flags file that was used to format this result can be browsed at

You can also download the XML flags source by saving the following link: