Dell Inc.  
PowerEdge R910 (Intel Xeon E7-4830, 2.13 GHz)  

SPECint®2006 = 31.0  
SPECint_base2006 = 28.8  

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  

Test date: Mar-2011  
Hardware Availability: Apr-2011  
Software Availability: Apr-2011  

Hardware

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E7-4830</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 2.40 GHz</td>
</tr>
<tr>
<td>CPU MHZ</td>
<td>2133</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>32 cores, 4 chips, 8 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>2 chips</td>
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<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
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<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
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<tr>
<td>L3 Cache</td>
<td>24 MB I+D on chip per chip</td>
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<tr>
<td>Other Cache</td>
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<td>Disk Subsystem</td>
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<td>Other Hardware</td>
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Software

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>Intel C++ Intel 64 Compiler XE for applications running on Intel 64</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
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<tr>
<td>File System</td>
<td>ext3</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
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<tr>
<td>Base Pointers</td>
<td>32/64-bit</td>
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<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
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<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V9.01</td>
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</tbody>
</table>
**SPEC CINT2006 Result**

Dell Inc.
PowerEdge R910 (Intel Xeon E7-4830, 2.13 GHz)

**SPECint2006 =** 31.0
**SPECint_base2006 =** 28.8

**CPU2006 license:** 55
**Test date:** Mar-2011
**Test sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Operating System Notes**

- 'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
- 'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
- echo 900 > /proc/sys/vm/nr_hugepages
- export HUGETLB_MORECORE=yes
- export LD_PRELOAD=/usr/lib64/libhugetlbfs.so

**Platform Notes**

- BIOS Settings:
  - Power Management = Maximum Performance (Default = Active Power Controller)

**General Notes**

The Dell PowerEdge R910 and the Bull NovaScale R480 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R910 model.
**OMP_NUM_THREADS** set to number of cores
Binaries were compiled on RHEL5.5

**Base Compiler Invocation**

```
icc -m64
```

## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
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<tr>
<td>400.perlbench</td>
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<td>19.0</td>
<td>514</td>
<td>19.0</td>
<td>514</td>
<td>19.0</td>
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<td>21.4</td>
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<td>14.0</td>
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<td>13.9</td>
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<td>13.9</td>
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<td>18.3</td>
<td>420</td>
<td>19.2</td>
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<td>420</td>
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<td>429.mcf</td>
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<td>28.4</td>
<td>321</td>
<td>28.4</td>
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<tr>
<td>445.gobmk</td>
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<td>595</td>
<td>17.6</td>
<td>605</td>
<td>17.3</td>
<td>571</td>
<td>18.4</td>
<td>571</td>
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<tr>
<td>456.hmmer</td>
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<td>34.3</td>
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<td>34.2</td>
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<td>34.8</td>
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</tr>
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<td>464.h264ref</td>
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<td>471.omnetpp</td>
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<td>18.0</td>
<td>348</td>
<td>18.0</td>
<td>346</td>
<td>18.1</td>
<td>252</td>
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<td>24.7</td>
<td>253</td>
</tr>
<tr>
<td>473.astar</td>
<td>397</td>
<td>17.7</td>
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<td>17.8</td>
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<td>17.8</td>
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<td>17.7</td>
<td>394</td>
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</tr>
<tr>
<td>483.xalancbmk</td>
<td>260</td>
<td>26.5</td>
<td>249</td>
<td>27.8</td>
<td>251</td>
<td>27.5</td>
<td>260</td>
<td>26.5</td>
<td>249</td>
<td>27.8</td>
<td>251</td>
</tr>
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</table>

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

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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl, -z, muldefs
-L/smartheap -lsmartheap64
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64

400.perlbench: icc -m32

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**Peak Compiler Invocation (Continued)**

429.mcf: icc -m32
445.gobmk: icc -m32
464.h264ref: icc -m32

C++ benchmarks (except as noted below):

icpc -m64
471.omnetpp: icpc -m32

**Peak Portability Flags**

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

**Peak Optimization Flags**

C benchmarks:

400.perlbench: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
-opt-prefetch -ansi-alias

403.gcc: -xSSE4.2 -ipo -03 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-auto-ilp32 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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Peak Optimization Flags (Continued)

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4

462.libquantum: basepeak = yes

464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:

471.omnetpp: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs
-L/smartheap -lsmartheap
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110308.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110308.xml
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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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