Dell Inc.

PowerEdge R715 (AMD Opteron 6174, 2.20 GHz)

**SPECint \_rate2006 = 392**

**SPECint \_rate\_base2006 = 338**

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

**CPU Name:** AMD Opteron 6174  
**CPU Characteristics:**  
- **CPU MHz:** 2200  
- **FPU:** Integrated  
- **CPU(s) enabled:** 24 cores, 2 chips, 12 cores/chip  
- **Primary Cache:** 64 KB I + 64 KB D on chip per core  
- **Secondary Cache:** 512 KB I+D on chip per core  
- **Other Cache:** None  
- **Memory:** 64 GB (16 x 4 GB DDR3-1333 DR DIMM, CL9, ECC)  
- **Disk Subsystem:** 1 x 146 GB SAS 10000 RPM SAS  
- **Other Hardware:** None

**Operating System:** SUSE Linux Enterprise Server 11 (x86_64)  
**Compiler:** x86 Open64 4.2.4 Compiler Suite (from AMD)  
**Auto Parallel:** No  
**System State:** Run level 3 (Full multiuser with network)  
**Base Pointers:** 32/64-bit  
**Peak Pointers:** 32/64-bit  
**Other Software:** SmartHeap 8.1 32-bit Library for Linux
### SPEC CINT2006 Result

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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Seconds Ratio</th>
<th>Seconds Peak</th>
<th>Seconds Ratio</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>24</td>
<td>729</td>
<td>322</td>
<td>731</td>
<td>321</td>
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<tr>
<td>401.bzip2</td>
<td>24</td>
<td>1057</td>
<td>219</td>
<td>1031</td>
<td>225</td>
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<tr>
<td>403.gcc</td>
<td>24</td>
<td>752</td>
<td>257</td>
<td>754</td>
<td>256</td>
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<tr>
<td>429.mcf</td>
<td>24</td>
<td>775</td>
<td>282</td>
<td>772</td>
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<tr>
<td>445.gobmk</td>
<td>24</td>
<td>807</td>
<td>312</td>
<td>785</td>
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<tr>
<td>456.hmmer</td>
<td>24</td>
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<td>475</td>
<td>464</td>
<td>483</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>24</td>
<td>957</td>
<td>303</td>
<td>924</td>
<td>314</td>
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<tr>
<td>462.libquantum</td>
<td>24</td>
<td>410</td>
<td>1210</td>
<td>410</td>
<td>1210</td>
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<tr>
<td>464.h264ref</td>
<td>24</td>
<td>1215</td>
<td>437</td>
<td>1211</td>
<td>439</td>
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<tr>
<td>471.omnetpp</td>
<td>24</td>
<td>694</td>
<td>216</td>
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</tr>
<tr>
<td>473.astar</td>
<td>24</td>
<td>800</td>
<td>210</td>
<td>796</td>
<td>212</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>24</td>
<td>450</td>
<td>368</td>
<td>456</td>
<td>363</td>
</tr>
</tbody>
</table>

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

**Submit Notes**

The config file option 'submit' was used. 'numactl' was used to bind copies to the cores. See the configuration file for details.

**Operating System Notes**

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

Set vm/nr_hugepages=10800 in /etc/sysctl.conf

mount -t hugetlbfs nodev /mnt/hugepages

**General Notes**

Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "450"
LD_LIBRARY_PATH = "/cpu2006/amd1002-rate-libs-revC/64:/cpu2006/amd1002-rate-libs-revC/32"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at http://developer.amd.com/cpu/open64

Binaries were compiled on SLES10 SP2 with binutils 2.18
## SPEC CINT2006 Result

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### CPU2006 license:
55

### Test date:
Aug-2010

### Test sponsor:
Dell Inc.

### Tested by:
Dell Inc.

### Hardware Availability:
Mar-2010

### Software Availability:
Jul-2010

## Base Compiler Invocation

C benchmarks:  
opencc

C++ benchmarks:  
openCC

## Base Portability Flags

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## Base Optimization Flags

### C benchmarks:
- `-march=barcelona`  
- `-ms`  
- `-Ofast`  
- `-CG:local_sched_alg=1`  
- `-INLINE:aggressive=on`  
- `-HP:bdt=2m:heap=2m`  

### C++ benchmarks:
- `-march=barcelona`  
- `-ms`  
- `-Ofast`  
- `-m32`  
- `-INLINE:aggressive=on`  
- `-CG:cmp_peep=on`  
- `-L/root/work/libraries/SmartHeap-8.1/lib`  
- `-lsmartheap`

## Peak Compiler Invocation

C benchmarks:  
opencc

C++ benchmarks:  
openCC

## Peak Portability Flags

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<td>-DSPEC_CPU_LINUX</td>
</tr>
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</table>

### Peak Optimization Flags

**C benchmarks:**

400.perlbench:
- -march=barcelona
- -ms
- -fb_create fbdata(pass 1)
- -fb_opt fbdata(pass 2)
- -Ofast
- -IPA:plimit=20000
- -LNO:opt=0
- -OPT:unroll_times_max=8
- -OPT:unroll_size=256
- -OPT:unroll_level=2
- -OPT:keep_ext=on
- -WOPT:if_conv=0
- -CG:local_sched_alg=1
- -CG:unroll_fb_req=on
- -HP:bdt=2m:heap=2m

401.bzip2:
- -march=barcelona
- -ms
- -fb_create fbdata(pass 1)
- -fb_opt fbdata(pass 2)
- -o3
- -OPT:alias=disjoint
- -OPT:goto=off
- -CG:local_sched_alg=1
- -CG:unroll_fb_req=on
- -HP:bdt=2m:heap=2m

403.gcc:
- -march=barcelona
- -ms
- -fb_create fbdata(pass 1)
- -fb_opt fbdata(pass 2)
- -Ofast
- -LNO:trip_count=256
- -LNO:prefetch_ahead=10
- -CG:cmp_peep=on
- -m32
- -HP:bdt=2m:heap=2m
- -GRA:unspill=on
- -IPA:small_pu=200

429.mcf:
- -march=barcelona
- -ms
- -O3
- -ipa
- -INLINE:aggressive=on
- -CG:cm=off
- -GRA:prioritize_by_density=on
- -m32
- -HP:bdt=2m:heap=2m

445.gobmk:
- -march=barcelona
- -ms
- -fb_create fbdata(pass 1)
- -fb_opt fbdata(pass 2)
- -O3
- -OPT:alias=restrict
- -OPT:unroll_times_max=8
- -OPT:unroll_size=256
- -OPT:unroll_level=2
- -IPA:plimit=750
- -IPA:min_hotness=300
- -IPA:pu_reorder=1
- -LNO:prefetch=1
- -LNO:ignore_feedback=off
- -CG:p2align=on
- -CG:unroll_fb_req=on
- -HP:bdt=2m:heap=2m

456.hmmer:
- -march=barcelona
- -ms
- -fb_create fbdata(pass 1)
- -fb_opt fbdata(pass 2)
- -Ofast
- -LNO:prefetch=0
- -OPT:alias=disjoint
- -OPT:unroll_times_max=8
- -OPT:unroll_size=256
- -OPT:unroll_level=2
- -OPT:keep_ext=on
- -CG:local_sched_1=1
- -CG:cflow=0
- -CG:push_pop_int_saved_regs=off
- -CG:cmp_peep=on
- -HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

458.sjeng: -march=barcelona -ms = -fb_create fdatab (pass 1)
  -fb_opt fdatab (pass 2) -O3 -ipa -LNO:ignore_feedback=off
  -LNO:full_unroll=10 -LNO:fission=0 -LNO:fission=2
  -IPA:pu_reorder=2 -CG:ptr_load_use=0
  -OPT:unroll_max=8 -INLINE:aggressive=on

462.libquantum: -march=barcelona -ms = -O2 -LNO:pf2=0 -CG:gc=off
  -CG:use_prefetchcnta=on -CG:cmp_peep=on -WOPT:aggstr=0
  -HP:bdt=2m:heap=2m -OPT:alias=disjoint
  -INLINE:aggressive=on -IPA:space=1000 -IPA:plimit=20000

464.h264ref: -march=barcelona -ms = -fb_create fdatab (pass 1)
  -fb_opt fdatab (pass 2) -O3 -IPA:plimit=20000
  -OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0
  -CG:push_pop_int_saved_regs=off

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -march=barcelona -ms = -fb_create fdatab (pass 1)
  -fb_opt fdatab (pass 2) -Oast -TENV:frame_pointer=off
  -WOPT:if_conv=0 -GRA:optimize_boundary=on
  -OPT:alias=disjoint -INLINE:aggressive=on
  -IPA:small_pu=3000 -IPA:plimit=3000 -m32
  -HP:bdt=2m:heap=2m

483.xalancbmk: -march=barcelona -ms = -INLINE:aggressive=on -m32
  -CG:cmp_peep=on -GRA:unspill=on -TENV:frame_pointer=off
  -fno-emit-exceptions
  -L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap

The flags files that were used to format this result can be browsed at

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/amd-platform-rate-revC.xml
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<tr>
<td>Software Availability</td>
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For questions about this result, please contact the tester.

For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.


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