# SPEC® CINT2006 Result

## Dell Inc.

**PowerEdge M820 (Intel Xeon E5-4603, 2.00 GHz)**

<table>
<thead>
<tr>
<th>SPECint Rate Base2006 = 434</th>
</tr>
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<th>Tested by: Dell Inc.</th>
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<td>Hardware Availability: Aug-2012</td>
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</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name: Intel Xeon E5-4603</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
</tr>
<tr>
<td>CPU MHz: 2000</td>
</tr>
<tr>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable: 2,4 chip</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache: 10 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache: None</td>
</tr>
<tr>
<td>Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1067 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem: 1 x 900 GB 10000 RPM SAS</td>
</tr>
<tr>
<td>Other Hardware: None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System: SUSE Linux Enterprise Server 11 SP2 (x86_64) 3.0.13-0.27-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>File System: ext3</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers: 32-bit</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Other Software: Microquill SmartHeap V9.01</td>
</tr>
</tbody>
</table>
SPEC CINT2006 Result

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603, 2.00 GHz)

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SPECint_rate_base2006 = 434

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

Test date: May-2012
Hardware Availability: Aug-2012
Software Availability: Feb-2012

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
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<td>996</td>
<td>314</td>
<td>999</td>
<td>313</td>
<td>996</td>
<td>314</td>
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<tr>
<td>401.bzip2</td>
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<td>1307</td>
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<td>1315</td>
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<td>1275</td>
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<td>429.mcf</td>
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<td>445.gobmk</td>
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<td>314</td>
<td>1048</td>
<td>320</td>
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<td>456.hmmer</td>
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<td>562</td>
<td>532</td>
<td>572</td>
<td>522</td>
<td>570</td>
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<tr>
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<td>32</td>
<td>1246</td>
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<tr>
<td>462.libquantum</td>
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<tr>
<td>464.h264ref</td>
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<td>528</td>
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<td>471.omnetpp</td>
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<td>851</td>
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<td>483.xalancbmk</td>
<td>32</td>
<td>469</td>
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<td>470</td>
<td>470</td>
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<td>471</td>
</tr>
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</table>

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost set to Enabled
C States/C1E set to Enabled
Sysinfo program /root/CPU2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on linux-0j3r Fri May 11 10:28:39 2012

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

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-4603 0 @ 2.00GHz
4 "physical id"s (chips)
32 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
Continued on next page
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Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.

  cpu cores : 4
  siblings : 8
  physical 0: cores 0 1 2 3
  physical 1: cores 0 1 2 3
  physical 2: cores 0 1 2 3
  physical 3: cores 0 1 2 3
  cache size : 10240 KB

From /proc/meminfo

  MemTotal:       264501520 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*

  SuSE-release:
    SUSE Linux Enterprise Server 11 (x86_64)
    VERSION = 11
    PATCHLEVEL = 2

  uname -a:
    Linux linux-0j3r 3.0.13-0.27-default #1 SMP Wed Feb 15 13:33:49 UTC 2012
      (d73692b) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 May 11 10:13 last=S

  SPEC is set to: /root/CPU2006-1.2

  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda1      ext3  886G  160G  682G  19% /

Additional information from dmidecode:

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/CPU2006-1.2/libs/32:/root/CPU2006-1.2/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
 Transparent Huge Pages enabled with:
   echo always > /sys/kernel/mm/transparent_hugepage/enabled
 Filesystem page cache cleared with:
   echo 1> /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
   numactl --interleave=all runspec <etc>
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Base Compiler Invocation

C benchmarks:
  icc -m32

C++ benchmarks:
  icpc -m32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:
  -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
  -Wl,-z,muldefs -L/smartheap -lsmartheap

Base Other Flags

C benchmarks:
  403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
  icc -m32
  400.perlbench: icc -m64
  401.bzip2: icc -m64
  456.hmmer: icc -m64
  458.sjeng: icc -m64

C++ benchmarks:
  icpc -m32
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### Peak Portability Flags

- 400.perlbench: –DSPEC_CPU_LP64 –DSPEC_CPU_LINUX_X64
- 401.bzip2: –DSPEC_CPU_LP64
- 456.hmmer: –DSPEC_CPU_LP64
- 458.sjeng: –DSPEC_CPU_LP64
- 462.libquantum: –DSPEC_CPU_LINUX
- 483.xalancbmk: –DSPEC_CPU_LINUX

### Peak Optimization Flags

**C benchmarks:**

- 400.perlbench: –xSSE4.2(pass 2) –prof-gen(pass 1) –ipo(pass 2)  
  -o3(pass 2) –no-prec-div(pass 2) –prof-use(pass 2)  
  –auto-ilp32
- 401.bzip2: –xSSE4.2(pass 2) –prof-gen(pass 1) –ipo(pass 2)  
  -o3(pass 2) –no-prec-div(pass 2) –prof-use(pass 2)  
  –opt-prefetch –auto-ilp32 –ansi-alias
- 403.gcc: basepeak = yes
- 429.mcf: basepeak = yes
- 445.gobmk: –xSSE4.2(pass 2) –prof-gen(pass 1) –prof-use(pass 2)  
  –ansi-alias –opt-mem-layout-trans=3
- 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 –auto-ilp32
- 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

**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)  
  –ansi-alias –opt-ra-region-strategy=block –Wl,-z,muldefs  
  -L/smartheap -lsmartheap
- 473.astar: basepeak = yes

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Peak Optimization Flags (Continued)

483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml

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