### SPECint® Result

**Dell Inc.**

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

<table>
<thead>
<tr>
<th>SPECint®_rate2006</th>
<th>532</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>511</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test date:** Feb-2014

**Hardware Availability:** Mar-2014

**Software Availability:** Aug-2013

### Hardware

<table>
<thead>
<tr>
<th>Description</th>
<th>SPECint®_rate2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td>Intel Xeon E5-4603 v2</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong></td>
<td>Integrated</td>
</tr>
<tr>
<td><strong>CPU MHz:</strong></td>
<td>2200</td>
</tr>
<tr>
<td><strong>FPU:</strong></td>
<td>4 chip</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong></td>
<td>16 cores, 4 chips, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong></td>
<td>4 chip</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong></td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong></td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td><strong>L3 Cache:</strong></td>
<td>10 MB I+D on chip per chip</td>
</tr>
<tr>
<td><strong>Other Cache:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Memory:</strong></td>
<td>512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC)</td>
</tr>
<tr>
<td><strong>Disk Subsystem:</strong></td>
<td>1 x 1TB 7200 RPM Near-Line SAS</td>
</tr>
<tr>
<td><strong>Other Hardware:</strong></td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Description</th>
<th>SPECint®_rate2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating System:</strong></td>
<td>SUSE Linux Enterprise Server 11 (x86_64) 3.0.76-0.11-default</td>
</tr>
<tr>
<td><strong>Compiler:</strong></td>
<td>C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td><strong>Auto Parallel:</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>File System:</strong></td>
<td>ext2</td>
</tr>
<tr>
<td><strong>System State:</strong></td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td><strong>Base Pointers:</strong></td>
<td>32-bit</td>
</tr>
<tr>
<td><strong>Peak Pointers:</strong></td>
<td>32/64-bit</td>
</tr>
<tr>
<td><strong>Other Software:</strong></td>
<td>Microquill SmartHeap V10.0</td>
</tr>
</tbody>
</table>
SPEC CINT2006 Result

Dell Inc.
PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

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

SPECint_rate2006 = 532
SPECint_rate_base2006 = 511

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Aug-2013

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Copies</td>
<td>Seconds</td>
</tr>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>860</td>
<td>363</td>
<td>861</td>
<td>363</td>
<td>863</td>
<td>362</td>
<td>32</td>
<td>706</td>
<td>443</td>
<td>715</td>
<td>437</td>
<td>716</td>
<td>437</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>1169</td>
<td>264</td>
<td>1151</td>
<td>268</td>
<td>1143</td>
<td>270</td>
<td>32</td>
<td>1125</td>
<td>275</td>
<td>1120</td>
<td>276</td>
<td>1124</td>
<td>275</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>32</td>
<td>616</td>
<td>418</td>
<td>613</td>
<td>420</td>
<td>612</td>
<td>421</td>
<td>32</td>
<td>616</td>
<td>418</td>
<td>613</td>
<td>420</td>
<td>612</td>
<td>421</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>338</td>
<td>864</td>
<td>454</td>
<td>658</td>
<td>338</td>
<td>864</td>
<td>32</td>
<td>338</td>
<td>864</td>
<td>338</td>
<td>864</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>948</td>
<td>354</td>
<td>947</td>
<td>355</td>
<td>32</td>
<td>917</td>
<td>366</td>
<td>915</td>
<td>367</td>
<td>907</td>
<td>370</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>32</td>
<td>455</td>
<td>657</td>
<td>453</td>
<td>659</td>
<td>454</td>
<td>658</td>
<td>32</td>
<td>402</td>
<td>743</td>
<td>401</td>
<td>744</td>
<td>402</td>
<td>742</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>1094</td>
<td>354</td>
<td>1094</td>
<td>354</td>
<td>1092</td>
<td>355</td>
<td>32</td>
<td>1057</td>
<td>366</td>
<td>1058</td>
<td>366</td>
<td>1058</td>
<td>366</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>32</td>
<td>202</td>
<td>3280</td>
<td>202</td>
<td>3280</td>
<td>202</td>
<td>3280</td>
<td>32</td>
<td>202</td>
<td>3280</td>
<td>202</td>
<td>3280</td>
<td>202</td>
<td>3280</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32</td>
<td>1181</td>
<td>600</td>
<td>1175</td>
<td>603</td>
<td>1181</td>
<td>599</td>
<td>32</td>
<td>1168</td>
<td>606</td>
<td>1168</td>
<td>606</td>
<td>1169</td>
<td>606</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>644</td>
<td>311</td>
<td>645</td>
<td>310</td>
<td>32</td>
<td>601</td>
<td>333</td>
<td>601</td>
<td>333</td>
<td>602</td>
<td>332</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>741</td>
<td>303</td>
<td>743</td>
<td>302</td>
<td>740</td>
<td>304</td>
<td>32</td>
<td>741</td>
<td>303</td>
<td>743</td>
<td>302</td>
<td>740</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>374</td>
<td>590</td>
<td>374</td>
<td>590</td>
<td>32</td>
<td>374</td>
<td>590</td>
<td>374</td>
<td>590</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</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

Virtualization Technology disabled
Execute Disable disabled
Logical Processor enabled
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Mon Feb 24 09:19:51 2014

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 v2 @ 2.20GHz
  4 "physical id"s (chips)
  32 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
Continued on next page
Dell Inc.  
PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)  

SPECint_rate2006 = 532  
SPECint_rate_base2006 = 511

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

Test date: Feb-2014  
Hardware Availability: Mar-2014  
Software Availability: Aug-2013

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: 529392220 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 = 3

uname -a:

- Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)
- x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 24 09:11 last=S

SPEC is set to: /root/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext2 909G 7.8G 900G 1% /

Additional information from dmidecode:

- BIOS Dell Inc. 2.0.24 01/21/2014
- Memory:
  - 8x 002C04B3002C 36JSF2G72PZ-1G9E1 16 GB 1333 MHz
  - 21x 00CE00B300CE M393B2G70DB0-CMA 16 GB 1333 MHz
  - 3x 00CE04B300CE M393B2G70DB0-CMA 16 GB 1333 MHz

(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:/root/cpu2006-1.2/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Transparent Huge Pages enabled with:
General Notes (Continued)

- 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>

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/sh -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

Continued on next page
Dell Inc.
PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECint_rate2006 = 532
SPECint_rate_base2006 = 511

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

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Aug-2013

Peak Compiler Invocation (Continued)

401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

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
456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
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

Continued on next page
Peak Optimization Flags (Continued)

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/sh -lsmartheap

473.astar: basepeak = yes
483.xalanchbmk: 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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revC.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Originally published on 8 April 2014.