## SPEC® CINT2006 Result

**Dell Inc.**

PowerEdge R720xd (Intel Xeon E5-2650 v2, 2.60 GHz)

### SPECint Rate2006 = 683

| SPECint_rate_base2006 | 661 |

**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test date:** Aug-2013

**Hardware Availability:** Sep-2013

**Software Availability:** Sep-2013

**Tested by:** Dell Inc.

**Test sponsor:** Dell Inc.

### Hardware

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2650 v2</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.40 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2600</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 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>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 1 TB 7200 RPM SATA</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 11 SP3 (x86_64) 3.0.76-0.11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>CIC++: Version 14.0.0.0.80 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>ext2</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</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>Microquill SmartHeap V10.0</td>
</tr>
</tbody>
</table>
Dell Inc.

PowerEdge R720xd (Intel Xeon E5-2650 v2, 2.60 GHz)

SPEC CINT2006 Result

SPECint_rate2006 = 683
SPECint_rate_base2006 = 661

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

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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>621</td>
<td>503</td>
<td>622</td>
<td>503</td>
<td>622</td>
<td>503</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>884</td>
<td>349</td>
<td>882</td>
<td>350</td>
<td>882</td>
<td>350</td>
</tr>
<tr>
<td>403.gcc</td>
<td>32</td>
<td>487</td>
<td>529</td>
<td>488</td>
<td>528</td>
<td>489</td>
<td>527</td>
</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>286</td>
<td>1020</td>
<td>287</td>
<td>1020</td>
<td>287</td>
<td>1020</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>678</td>
<td>495</td>
<td>689</td>
<td>488</td>
<td>681</td>
<td>493</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>32</td>
<td>331</td>
<td>903</td>
<td>331</td>
<td>902</td>
<td>330</td>
<td>902</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>812</td>
<td>177</td>
<td>811</td>
<td>478</td>
<td>810</td>
<td>487</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>32</td>
<td>152</td>
<td>4380</td>
<td>151</td>
<td>4380</td>
<td>151</td>
<td>4380</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32</td>
<td>867</td>
<td>816</td>
<td>866</td>
<td>818</td>
<td>865</td>
<td>815</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>557</td>
<td>359</td>
<td>557</td>
<td>359</td>
<td>556</td>
<td>359</td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>593</td>
<td>379</td>
<td>595</td>
<td>378</td>
<td>596</td>
<td>377</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>309</td>
<td>714</td>
<td>308</td>
<td>718</td>
<td>308</td>
<td>717</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

BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
Logical Processor enabled
System Profile set to Performance
Sysinfo program /root/cpu2006.1.2.ic13/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Sat Aug 31 11:16:15 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

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2650 v2 @ 2.60GHz
2 "physical id"s (chips)
32 "processors"

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Dell Inc. PowerEdge R720xd (Intel Xeon E5-2650 v2, 2.60 GHz)

**SPEC CINT2006 Result**

**SPECint_rate2006 = 683**

**SPECint_rate_base2006 = 661**

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<td>Test date:</td>
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<td>Sep-2013</td>
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### Platform Notes (Continued)

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

- cpu cores : 8
- siblings : 16
- physical 0: cores 0 1 2 3 4 5 6 7
- physical 1: cores 0 1 2 3 4 5 6 7
- cache size : 20480 KB

From /proc/meminfo

- MemTotal: 264601772 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /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 Aug 31 11:13 last=S

SPEC is set to: /root/cpu2006.1.2.ic13

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda2</td>
<td>ext2</td>
<td>817G</td>
<td>11G</td>
<td>806G</td>
<td>2%</td>
<td>/</td>
</tr>
</tbody>
</table>

Additional information from dmidecode:

- BIOS Dell Inc. 2.0.18 08/10/2013
- Memory:
  - 8x 00CE00B300CE M393B2G70DB0-CMA 16 GB 1866 MHz
  - 8x 00CE04B300CE M393B2G70DB0-CMA 16 GB 1866 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.ic13/libs/32:/root/cpu2006.1.2.ic13/libs/64:/root/cpu2006.1.2.ic13/sh"

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:

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**General Notes (Continued)**

```
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```

The Dell PowerEdge R720 and the Dell PowerEdge R720xd models are electronically equivalent.
The result has been measured on a Dell PowerEdge R720xd model.

---

**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`

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PowerEdge R720xd (Intel Xeon E5-2650 v2, 2.60 GHz)

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### Peak Compiler Invocation (Continued)

400.perlbench: icc -m64
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

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**Peak Optimization Flags (Continued)**

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/sh -lsmartheap

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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.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-revB.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Sep 23 17:35:37 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 October 2013.