Dell Inc. PowerEdge R720xd (Intel Xeon E5-2640 v2, 2.00 GHz)

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint®_rate2006 = 542</td>
<td>SPECint_rate_base2006 = 522</td>
</tr>
</tbody>
</table>

| Test date: | Sep-2013 |
| Test sponsor: | Dell Inc. |
| Tested by: | Dell Inc. |
| Hardware Availability: | Sep-2013 |
| Software Availability: | Sep-2013 |

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<tr>
<th>SPECint_rate2006 = 542</th>
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<tbody>
<tr>
<td>CPU2006 license:</td>
<td>55</td>
</tr>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon E5-2640 v2</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 2.50 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2000</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, running at 1600 MHz)</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>

| Operating System: | SUSE Linux Enterprise Server 11 SP3 (x86_64) 3.0.76-0.11-default |
| Compiler: | C++: Version 14.0.0.0.80 of Intel C++ Studio XE for Linux |
| Auto Parallel: | No |
| File System: | ext2 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | Microquill SmartHeap V10.0 |
Dell Inc.

PowerEdge R720xd (Intel Xeon E5-2640 v2, 2.00 GHz)

SPEC CINT2006 Result

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SPECint_rate2006 = 542

SPECint_rate_base2006 = 522

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>806</td>
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<td>805</td>
<td>388</td>
<td>807</td>
<td>388</td>
<td>32</td>
<td>675</td>
<td>463</td>
<td>680</td>
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<tr>
<td>401.bzip2</td>
<td>32</td>
<td>1103</td>
<td>280</td>
<td>1105</td>
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<td>1105</td>
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<td>32</td>
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<td>403.mcc</td>
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<td>608</td>
<td>424</td>
<td>609</td>
<td>423</td>
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<td>606</td>
<td>425</td>
<td>608</td>
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<tr>
<td>429.mcf</td>
<td>32</td>
<td>346</td>
<td>843</td>
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<td>842</td>
<td>347</td>
<td>841</td>
<td>32</td>
<td>346</td>
<td>843</td>
<td>347</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>898</td>
<td>374</td>
<td>897</td>
<td>374</td>
<td>899</td>
<td>374</td>
<td>32</td>
<td>892</td>
<td>377</td>
<td>866</td>
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<tr>
<td>456.hmmer</td>
<td>32</td>
<td>432</td>
<td>691</td>
<td>433</td>
<td>690</td>
<td>431</td>
<td>693</td>
<td>32</td>
<td>386</td>
<td>774</td>
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<td>458.sjeng</td>
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<td>369</td>
<td>1048</td>
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<td>1045</td>
<td>371</td>
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<td>1010</td>
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<td>462.libquantum</td>
<td>32</td>
<td>245</td>
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<td>3400</td>
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<td>464.h264ref</td>
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<td>1128</td>
<td>628</td>
<td>1123</td>
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<td>1132</td>
<td>625</td>
<td>32</td>
<td>1121</td>
<td>632</td>
<td>1118</td>
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<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>661</td>
<td>302</td>
<td>663</td>
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<td>302</td>
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<td>625</td>
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<tr>
<td>473.astar</td>
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<td>741</td>
<td>303</td>
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<td>741</td>
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<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>386</td>
<td>573</td>
<td>384</td>
<td>575</td>
<td>386</td>
<td>572</td>
<td>32</td>
<td>386</td>
<td>573</td>
<td>386</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 Mon Sep 9 09:12:32 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 E5-2640 v2 @ 2.00GHz
2 "physical id"s (chips)
32 "processors"

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Dell Inc. PowerEdge R720xd (Intel Xeon E5-2640 v2, 2.00 GHz)

| SPECint_rate2006 | 542 |
| SPECint_rate_base2006 | 522 |

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

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

/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 Sep 9 09:10 last=S

SPEC is set to: /root/cpu2006.1.2.ic13
  Filesystem     Type  Size  Used Avail Use% Mounted on
  /dev/sda2      ext2  817G   14G  802G   2% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.19 08/29/2013
  Memory:
    8x 00CE00B300CE M393B2G70DB0-CMA 16 GB 1600 MHz
    8x 00CE04B300CE M393B2G70DB0-CMA 16 GB 1600 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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Dell Inc.

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SPECint_rate2006 = 542
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CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

General Notes (Continued)

echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
umactl --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
  401.bzip2: icc -m64

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Dell Inc.  
PowerEdge R720xd (Intel Xeon E5-2640 v2, 2.00 GHz)  

**SPEC CINT2006 Result**

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</table>

**Peak Compiler Invocation (Continued)**

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**  
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**

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Dell Inc.  

PowerEdge R720xd (Intel Xeon E5-2640 v2, 2.00 GHz)  

**SPECint**

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</tbody>
</table>

**CPU2006 license:** 55  
**Test date:** Sep-2013  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.

**Peak Optimization Flags (Continued)**

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


You can also download the XML flags sources by saving the following links:

- [http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml](http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml)

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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 v1.2.  
Originally published on 22 October 2013.