Dell Inc.

PowerEdge R410 (Intel Xeon E5649, 2.53 GHz)

SPECint\_rate2006 = 321
SPECint\_rate_base2006 = 300

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

Test date: Apr-2011
Hardware Availability: Feb-2011
Software Availability: Jan-2011

CPU Name: Intel Xeon E5649
CPU Characteristics: Intel Turbo Boost Technology up to 2.93 GHz
CPU MHz: 2533
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable: 1.2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: None
Other Cache: None
Memory: 48 GB (6 x 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 146 GB 15000 RPM SAS
Other Hardware: None

Hardware

Operating System: SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default
Compiler: Intel C++ Compiler XE for applications running on IA-32
Version 12.0.1.116 Build 20101116
Auto Parallel: No
File System: ext3
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V9.01

Software
Dell Inc.  
PowerEdge R410 (Intel Xeon E5649, 2.53 GHz)  

**SPEC CINT2006 Result**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Seconds Peak</th>
<th>Seconds Base</th>
<th>Seconds Peak</th>
<th>Seconds Base</th>
<th>Seconds Peak</th>
<th>Seconds Base</th>
<th>Seconds Peak</th>
<th>Seconds Base</th>
<th>Seconds Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
<td>Ratio</td>
</tr>
<tr>
<td>400.perlbench</td>
<td>24</td>
<td>916</td>
<td>915</td>
<td>915</td>
<td>915</td>
<td>256</td>
<td>256</td>
<td>256</td>
<td>256</td>
<td>24</td>
<td>757</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>24</td>
<td>1307</td>
<td>1315</td>
<td>1308</td>
<td>1308</td>
<td>177</td>
<td>177</td>
<td>177</td>
<td>177</td>
<td>24</td>
<td>1208</td>
</tr>
<tr>
<td>403.gcc</td>
<td>24</td>
<td>941</td>
<td>946</td>
<td>946</td>
<td>946</td>
<td>204</td>
<td>204</td>
<td>204</td>
<td>204</td>
<td>24</td>
<td>954</td>
</tr>
<tr>
<td>429.mcf</td>
<td>24</td>
<td>882</td>
<td>901</td>
<td>892</td>
<td>892</td>
<td>243</td>
<td>243</td>
<td>243</td>
<td>243</td>
<td>12</td>
<td>352</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>24</td>
<td>831</td>
<td>827</td>
<td>828</td>
<td>828</td>
<td>304</td>
<td>304</td>
<td>304</td>
<td>304</td>
<td>24</td>
<td>788</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>24</td>
<td>593</td>
<td>593</td>
<td>593</td>
<td>593</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>378</td>
<td>12</td>
<td>254</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>24</td>
<td>994</td>
<td>991</td>
<td>991</td>
<td>991</td>
<td>293</td>
<td>293</td>
<td>293</td>
<td>293</td>
<td>24</td>
<td>923</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>24</td>
<td>324</td>
<td>325</td>
<td>325</td>
<td>325</td>
<td>1530</td>
<td>1530</td>
<td>1530</td>
<td>1530</td>
<td>24</td>
<td>324</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>24</td>
<td>1258</td>
<td>1259</td>
<td>1259</td>
<td>1259</td>
<td>422</td>
<td>422</td>
<td>422</td>
<td>422</td>
<td>24</td>
<td>1247</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>24</td>
<td>767</td>
<td>767</td>
<td>767</td>
<td>767</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>24</td>
<td>744</td>
</tr>
<tr>
<td>473.astar</td>
<td>24</td>
<td>907</td>
<td>907</td>
<td>907</td>
<td>907</td>
<td>186</td>
<td>186</td>
<td>186</td>
<td>186</td>
<td>24</td>
<td>907</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>24</td>
<td>557</td>
<td>555</td>
<td>555</td>
<td>555</td>
<td>297</td>
<td>297</td>
<td>297</td>
<td>297</td>
<td>24</td>
<td>557</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

**Operating System Notes**

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 10800 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes

**Platform Notes**

BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)
Data Reuse = Disabled (Default = Enabled)

**General Notes**

Binaries were compiled on RHEL5.5
The Dell PowerEdge R410 and
the Bull NovaScale R430 F2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R410 model.
SPEC CINT2006 Result

Dell Inc.

PowerEdge R410 (Intel Xeon E5649, 2.53 GHz)

SPECint_rate2006 = 321
SPECint_rate_base2006 = 300

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

Test date: Apr-2011
Hardware Availability: Feb-2011
Software Availability: Jan-2011

Base Compiler Invocation

C benchmarks:
icc -m32

C++ benchmarks:
icc -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 -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs -L/smartheap -lsmartheap -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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

Continued on next page
Dell Inc.

PowerEdge R410 (Intel Xeon E5649, 2.53 GHz)

Specint_rate2006 = 321
Specint_rate_base2006 = 300

CPU2006 license: 55
Test date: Apr-2011
Test sponsor: Dell Inc.
Hardware Availability: Feb-2011
Tested by: Dell Inc.
Software Availability: Jan-2011

Peak Compiler Invocation (Continued)

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)
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

429.mcf: -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 -auto-ilp32

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -auto-ilp32

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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/smartheap
- L/smartheap

473.astar: basepeak = yes

483.xalanchmk: 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-ic12.0-linux64-revB.html
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml
http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20110524.00.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 v1.1.
Originally published on 2 August 2011.