Dell Inc.

PowerEdge R820 (Intel Xeon E5-4610, 2.40 GHz)

SPEClnt\_rate2006 = 878
SPEClnt\_rate_base2006 = 841

<table>
<thead>
<tr>
<th>Copy</th>
<th>perlbench</th>
<th>bzip2</th>
<th>gcc</th>
<th>mcf</th>
<th>gobmk</th>
<th>hmer</th>
<th>sjeng</th>
<th>libquantum</th>
<th>h264ref</th>
<th>omnetpp</th>
<th>astart</th>
<th>xalancbmk</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>738</td>
<td>630</td>
<td>457</td>
<td>680</td>
<td>1330</td>
<td>1280</td>
<td>1070</td>
<td>5080</td>
<td>1070</td>
<td>1060</td>
<td>1070</td>
<td>874</td>
</tr>
</tbody>
</table>

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SPEClnt\_rate_base2006 = 841

**Hardware**

- CPU Name: Intel Xeon E5-4610
- CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz
- CPU MHz: 2400
- FPU: Integrated
- CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip, 2 threads/core
- Primary Cache: 32 KB I + 32 KB D on chip per core
- Secondary Cache: 256 KB I+D on chip per core
- L3 Cache: 15 MB I+D on chip per chip
- Other Cache: None
- Memory: 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)
- Disk Subsystem: 4 x 300 GB 10000 RPM SAS, RAID 0
- Other Hardware: None

**Software**

- Operating System: SUSE Linux Enterprise Server 11 SP2 (x86_64) 3.0.13-0.27-default
- Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
- 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

**Test Details**

- Test Sponsor: Dell Inc.
- Tested by: Dell Inc.
- CPU2006 license: 55
- Test Date: Mar-2012
- Hardware Availability: May-2012
- Software Availability: Feb-2012
SPEC CINT2006 Result

Dell Inc.
PowerEdge R820 (Intel Xeon E5-4610, 2.40 GHz)

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CPU2006 license: 55
Test sponsor: Dell Inc.
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Results Table

<table>
<thead>
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<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
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<td>743</td>
<td>631</td>
<td>744</td>
<td>630</td>
<td>744</td>
<td>630</td>
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<td>459</td>
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<td>457</td>
<td>1017</td>
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<td>403.gcc</td>
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<td>680</td>
<td>569</td>
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<td>429.mcf</td>
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<td>631</td>
<td>797</td>
<td>632</td>
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<tr>
<td>456.hmmer</td>
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<td>625</td>
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<td>625</td>
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<tr>
<td>462.libquantum</td>
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<td>196</td>
<td>5080</td>
<td>196</td>
<td>5080</td>
</tr>
<tr>
<td>464.h264ref</td>
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<td>1070</td>
<td>1007</td>
<td>1050</td>
<td>1005</td>
<td>1050</td>
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<tr>
<td>471.omnetpp</td>
<td>48</td>
<td>617</td>
<td>486</td>
<td>619</td>
<td>485</td>
<td>618</td>
<td>485</td>
</tr>
<tr>
<td>473.astar</td>
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<td>674</td>
<td>500</td>
<td>673</td>
<td>500</td>
<td>675</td>
<td>499</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
<td>379</td>
<td>874</td>
<td>379</td>
<td>875</td>
<td>379</td>
<td>874</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

System Profile set to Custom
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 $ $Date:: 2011-10-11 #$ 6f2ebddf5032aaa42e583f96b07f9d3
running on icon4p Fri Mar 16 09:50:07 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 E5-4610 0 @ 2.40GHz
  4 "physical id"s (chips)
  48 "processors"

Continued on next page
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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 : 6
- siblings : 12
- physical 0: cores 0 1 2 3 4 5
- physical 1: cores 0 1 2 3 4 5
- physical 2: cores 0 1 2 3 4 5
- physical 3: cores 0 1 2 3 4 5

cache size : 15360 KB

From /proc/meminfo
- MemTotal: 264501512 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 icon4p 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 Mar 16 09:47 last=S
```

**SPEC is set to:** /root/CPU2006-1.2

- Filesystem     Type  Size  Used Avail Use% Mounted on
- /dev/sda2      ext3  1.1T  123G  917G  12% /

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.:
## Dell Inc.

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<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>878</th>
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</tr>
</tbody>
</table>

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

### General Notes (Continued)

numactl --interleave=all runspec <etc>
The Dell PowerEdge R820 and the Bull NovaScale R470 F3 Models are electronically equivalent.
The results have been measured on a Dell PowerEdge R820 model.

### Base Compiler Invocation

- **C benchmarks:**
  - icc -m32

- **C++ benchmarks:**
  - icpc -m32

### Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>-DSPEC_CPU_LINUX_IA32</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>-DSPEC_CPU_LINUX</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>-DSPEC_CPU_LINUX</td>
</tr>
</tbody>
</table>

### 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

Continued on next page
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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)
-03(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)
-03(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 -03 -no-prec-div -unroll2 -auto-ilp32
458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32
462.libquantum: basepeak = yes

Continued on next page
**Dell Inc.**

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**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 -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-ic12.1-official-linux64.20111122.html  
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.html

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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For other inquiries, please contact webmaster@spec.org.

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