Dell Inc.

PowerEdge R210 II (Intel Xeon E3-1220, 3.10 GHz)

<table>
<thead>
<tr>
<th>SPECint_rate2006 = 129</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006 = 124</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Tested by:  Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Availability:  Apr-2011</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E3-1220</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.40 GHz</td>
</tr>
<tr>
<td>CPU MHZ:</td>
<td>3100</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>4 cores, 1 chip, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1 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>8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>8 GB (4 x 2 GB 2Rx4 PC3-10600R-9, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 146 GB 15000 RPM SAS</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64</td>
</tr>
<tr>
<td>Version:</td>
<td>12.0.1.116 Build 20101116</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>ext3</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>SmartHeap 8.1 32-bit Library for Linux</td>
</tr>
</tbody>
</table>

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**SPECint®_rate2006 = 129**

**SPECint_rate_base2006 = 124**
Dell Inc.  
PowerEdge R210 II (Intel Xeon E3-1220, 3.10 GHz)  

**SPEC CINT2006 Result**

<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>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>4</td>
<td>396</td>
<td>98.8</td>
<td>394</td>
<td>99.2</td>
<td>394</td>
<td>99.1</td>
<td>4</td>
<td>318</td>
<td>123</td>
<td>316</td>
<td>124</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>4</td>
<td>566</td>
<td>68.2</td>
<td>564</td>
<td>68.4</td>
<td>564</td>
<td>68.4</td>
<td>4</td>
<td>515</td>
<td>75.0</td>
<td>517</td>
<td>74.7</td>
</tr>
<tr>
<td>403.gcc</td>
<td>4</td>
<td>314</td>
<td>103</td>
<td>316</td>
<td>102</td>
<td>313</td>
<td>103</td>
<td>4</td>
<td>307</td>
<td>105</td>
<td>310</td>
<td>104</td>
</tr>
<tr>
<td>429.mcf</td>
<td>4</td>
<td>244</td>
<td>150</td>
<td>243</td>
<td>150</td>
<td>243</td>
<td>150</td>
<td>4</td>
<td>244</td>
<td>150</td>
<td>243</td>
<td>150</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>4</td>
<td>468</td>
<td>89.7</td>
<td>466</td>
<td>90.0</td>
<td>465</td>
<td>90.2</td>
<td>4</td>
<td>458</td>
<td>91.6</td>
<td>458</td>
<td>91.6</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>4</td>
<td>218</td>
<td>171</td>
<td>220</td>
<td>170</td>
<td>221</td>
<td>169</td>
<td>4</td>
<td>218</td>
<td>171</td>
<td>220</td>
<td>170</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>4</td>
<td>504</td>
<td>96.1</td>
<td>503</td>
<td>96.2</td>
<td>503</td>
<td>96.2</td>
<td>4</td>
<td>491</td>
<td>98.7</td>
<td>491</td>
<td>98.7</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>4</td>
<td>130</td>
<td>635</td>
<td>128</td>
<td>646</td>
<td>129</td>
<td>644</td>
<td>4</td>
<td>130</td>
<td>635</td>
<td>128</td>
<td>646</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>4</td>
<td>475</td>
<td>186</td>
<td>470</td>
<td>188</td>
<td>470</td>
<td>188</td>
<td>4</td>
<td>459</td>
<td>193</td>
<td>461</td>
<td>192</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>4</td>
<td>337</td>
<td>74.1</td>
<td>338</td>
<td>74.0</td>
<td>338</td>
<td>74.0</td>
<td>4</td>
<td>310</td>
<td>80.7</td>
<td>310</td>
<td>80.7</td>
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<tr>
<td>473.astar</td>
<td>4</td>
<td>386</td>
<td>72.7</td>
<td>388</td>
<td>72.4</td>
<td>386</td>
<td>72.7</td>
<td>4</td>
<td>386</td>
<td>72.7</td>
<td>388</td>
<td>72.4</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>4</td>
<td>219</td>
<td>126</td>
<td>219</td>
<td>126</td>
<td>220</td>
<td>126</td>
<td>4</td>
<td>219</td>
<td>126</td>
<td>219</td>
<td>126</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 3600> /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so

**Platform Notes**

BIOS Settings:
Power Management = Maximum Performance (Default = Active Power Controller)

**General Notes**

The Dell PowerEdge R210 II and
the Bull NovaScale R410B P2 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R210 II model
Binaries were compiled on RHEL5.5
Dell Inc.

PowerEdge R210 II (Intel Xeon E3-1220, 3.10 GHz)

SPECint_rate2006 = 129
SPECint_rate_base2006 = 124

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:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:
-xAVX -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
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32
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Test date: Mar-2011
Hardware Availability: May-2011
Software Availability: Apr-2011

Peak Portability Flags

- 400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
- 401.bzip2: -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: -xAVX(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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div
  -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT
- 429.mcf: basepeak = yes
- 445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
  -ansi-alias -auto-ilp32
- 456.hmmer: basepeak = yes
- 458.sjeng: -xAVX(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

C++ benchmarks:

- 462.libquantum: basepeak = yes
  -B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

464.h264ref: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
  -ansi-alias

471.omnetpp: -xAVX(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

Continued on next page
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Peak Optimization Flags (Continued)

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-ic12.0-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

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

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