



# SPEC® CINT2006 Result

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Dell Inc.

SPECint®\_rate2006 = 129

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

SPECint\_rate\_base2006 = 124

CPU2006 license: 55

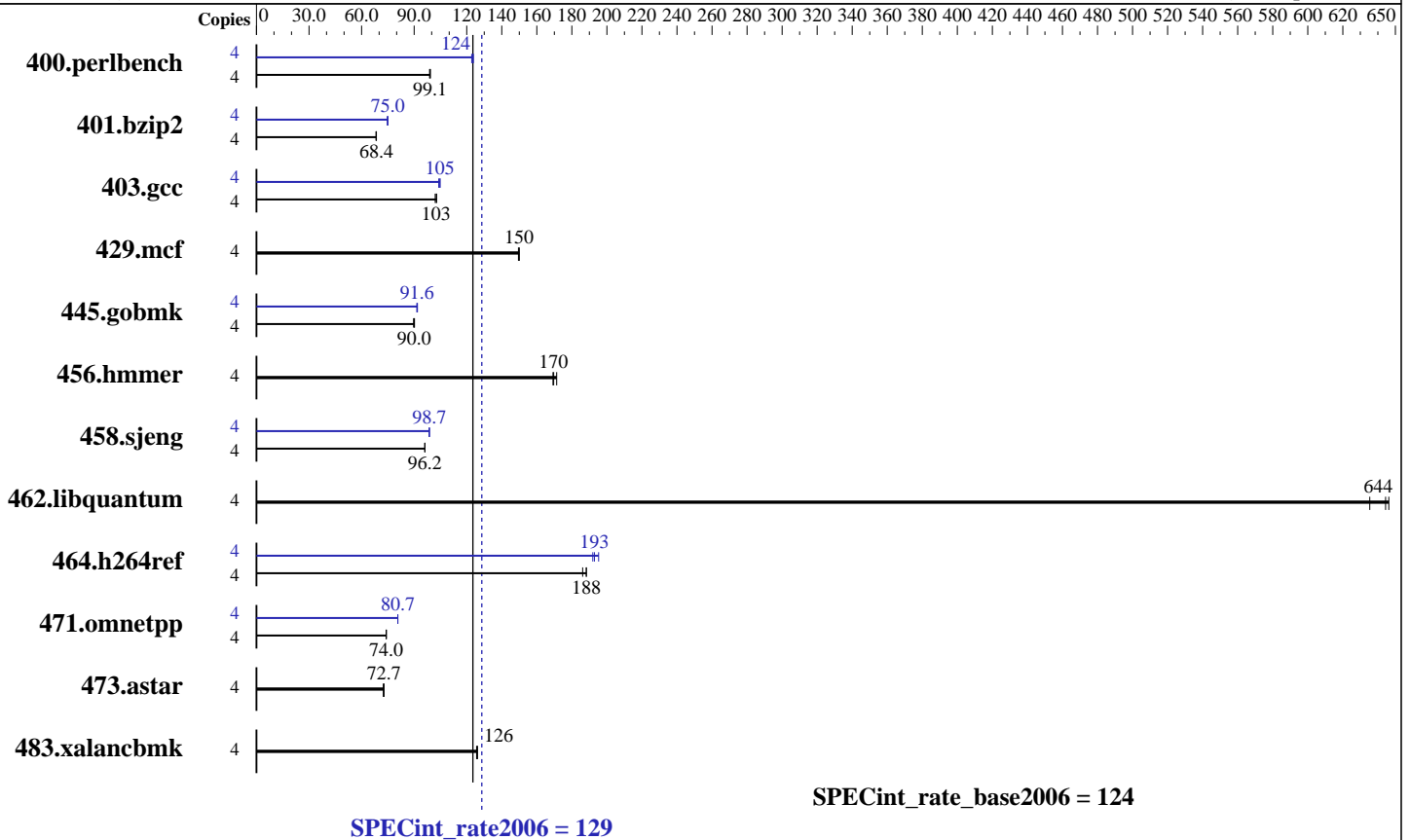
Test date: Mar-2011

Test sponsor: Dell Inc.

Hardware Availability: May-2011

Tested by: Dell Inc.

Software Availability: Apr-2011



## Hardware

CPU Name: Intel Xeon E3-1220  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz  
 CPU MHz: 3100  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 chip  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 256 KB I+D on chip per core  
 L3 Cache: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 8 GB (4 x 2 GB 2Rx4 PC3-10600R-9, ECC)  
 Disk Subsystem: 1 x 146 GB 15000 RPM SAS  
 Other Hardware: None

## Software

Operating System: SUSE Linux Enterprise Server 11 SP1 (x86\_64), Kernel 2.6.32.12-0.7-default  
 Compiler: Intel C++ and Fortran Intel 64 Compiler XE for applications running on Intel 64 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: SmartHeap 8.1 32-bit Library for Linux



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## Results Table

| Benchmark      | Base   |                   |                    |                   |                    |                   |                    | Peak   |                   |                    |                   |                    |                   |                   |
|----------------|--------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------|-------------------|--------------------|-------------------|--------------------|-------------------|-------------------|
|                | Copies | Seconds           | Ratio              | Seconds           | Ratio              | Seconds           | Ratio              | Copies | Seconds           | Ratio              | Seconds           | Ratio              | Seconds           | Ratio             |
| 400.perlbench  | 4      | 396               | 98.8               | 394               | 99.2               | <b><u>394</u></b> | <b><u>99.1</u></b> | 4      | 318               | 123                | 316               | 124                | <b><u>316</u></b> | <b><u>124</u></b> |
| 401.bzip2      | 4      | 566               | 68.2               | <b><u>564</u></b> | <b><u>68.4</u></b> | 564               | 68.4               | 4      | <b><u>515</u></b> | <b><u>75.0</u></b> | 517               | 74.7               | 515               | 75.0              |
| 403.gcc        | 4      | <b><u>314</u></b> | <b><u>103</u></b>  | 316               | 102                | 313               | 103                | 4      | 307               | 105                | 310               | 104                | <b><u>308</u></b> | <b><u>105</u></b> |
| 429.mcf        | 4      | 244               | 150                | <b><u>243</u></b> | <b><u>150</u></b>  | 243               | 150                | 4      | 244               | 150                | <b><u>243</u></b> | <b><u>150</u></b>  | 243               | 150               |
| 445.gobmk      | 4      | 468               | 89.7               | <b><u>466</u></b> | <b><u>90.0</u></b> | 465               | 90.2               | 4      | 458               | 91.6               | <b><u>458</u></b> | <b><u>91.6</u></b> | 457               | 91.9              |
| 456.hammer     | 4      | 218               | 171                | <b><u>220</u></b> | <b><u>170</u></b>  | 221               | 169                | 4      | 218               | 171                | <b><u>220</u></b> | <b><u>170</u></b>  | 221               | 169               |
| 458.sjeng      | 4      | 504               | 96.1               | <b><u>503</u></b> | <b><u>96.2</u></b> | 503               | 96.2               | 4      | <b><u>491</u></b> | <b><u>98.7</u></b> | 491               | 98.7               | 491               | 98.6              |
| 462.libquantum | 4      | 130               | 635                | 128               | 646                | <b><u>129</u></b> | <b><u>644</u></b>  | 4      | 130               | 635                | 128               | 646                | <b><u>129</u></b> | <b><u>644</u></b> |
| 464.h264ref    | 4      | 475               | 186                | 470               | 188                | <b><u>470</u></b> | <b><u>188</u></b>  | 4      | <b><u>459</u></b> | <b><u>193</u></b>  | 461               | 192                | 453               | 195               |
| 471.omnetpp    | 4      | 337               | 74.1               | 338               | 74.0               | <b><u>338</u></b> | <b><u>74.0</u></b> | 4      | 310               | 80.7               | <b><u>310</u></b> | <b><u>80.7</u></b> | 310               | 80.7              |
| 473.astar      | 4      | <b><u>386</u></b> | <b><u>72.7</u></b> | 388               | 72.4               | 386               | 72.7               | 4      | <b><u>386</u></b> | <b><u>72.7</u></b> | 388               | 72.4               | 386               | 72.7              |
| 483.xalancbmk  | 4      | <b><u>219</u></b> | <b><u>126</u></b>  | 219               | 126                | 220               | 126                | 4      | <b><u>219</u></b> | <b><u>126</u></b>  | 219               | 126                | 220               | 126               |

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 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge R210 II model. Binaries were compiled on RHEL5.5



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## 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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## 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

462.libquantum: basepeak = yes

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

C++ benchmarks:

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

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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 questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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