



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 77.2

PowerEdge R900 (Intel Xeon E7320, 2.13 GHz)

SPECint\_rate\_base2006 = 70.7

CPU2006 license: 55

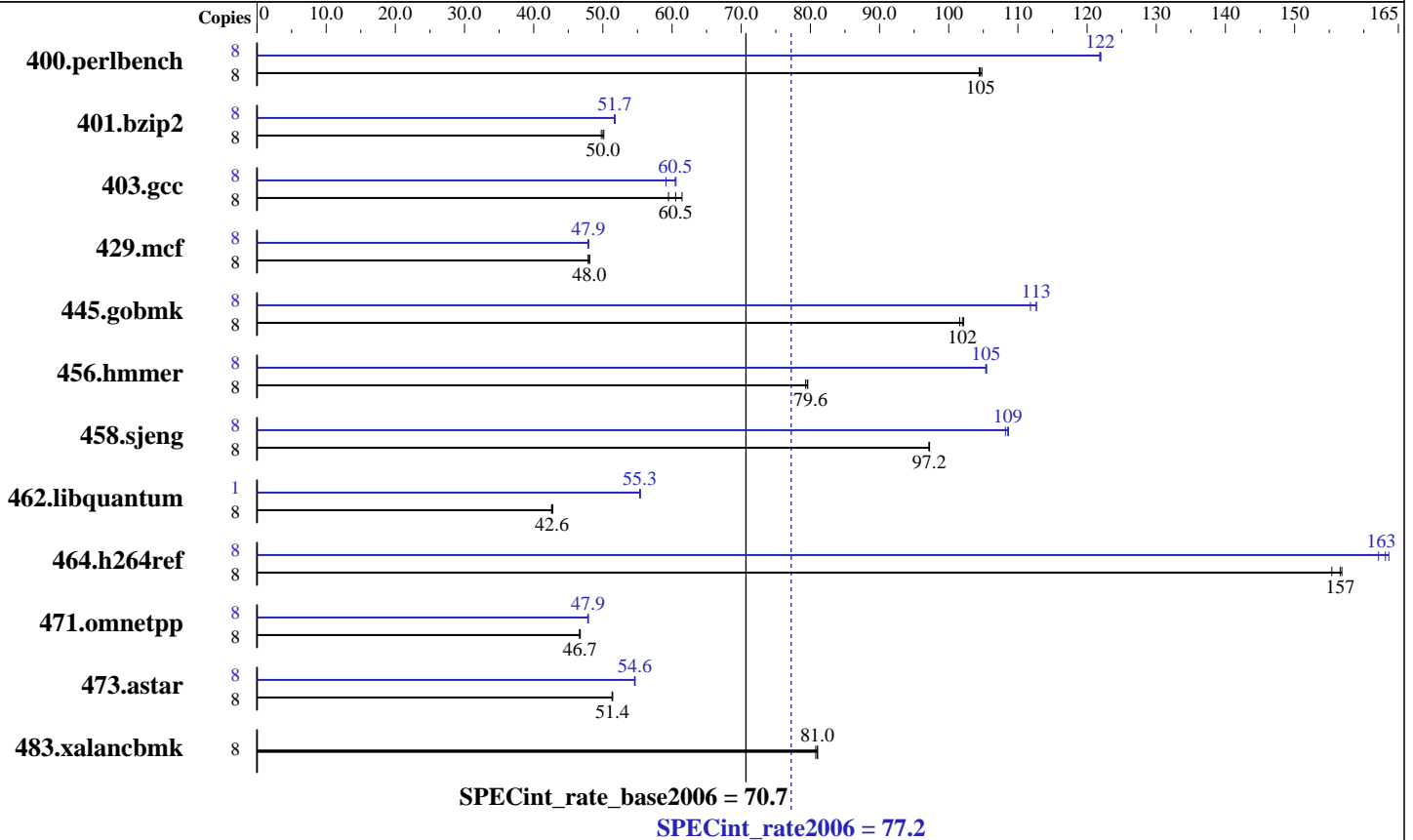
Test date: Sep-2008

Test sponsor: Dell Inc.

Hardware Availability: Nov-2007

Tested by: Dell Inc.

Software Availability: May-2008



## Hardware

CPU Name: Intel Xeon E7320  
 CPU Characteristics:  
 CPU MHz: 2133  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 2,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 4 MB I+D on chip per chip, 2 MB shared / 2 cores  
 L3 Cache: None  
 Other Cache: None  
 Memory: 16 GB (16 x 1 GB 667 MHz ECC CL5 FB-DIMM)  
 Disk Subsystem: 2 x 300 GB 10000 RPM SAS (RAID-0)  
 Other Hardware: None

## Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP2, Kernel 2.6.16-60.0.21-smp  
 Compiler: Intel C++ Compiler 10.1 for Linux Build 20080312 Package ID: l\_cc\_p\_10.1.015  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V8.1 Binutils 2.18.50.0.7.20080502



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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  | 8      | 746        | 105         | 749         | 104         | <b>747</b>  | <b>105</b> | 8      | <b>641</b> | <b>122</b>  | 642         | 122         | 641         | 122         |
| 401.bzip2      | 8      | 1540       | 50.1        | <b>1543</b> | <b>50.0</b> | 1551        | 49.8       | 8      | 1494       | 51.7        | <b>1493</b> | <b>51.7</b> | 1492        | 51.8        |
| 403.gcc        | 8      | 1048       | 61.4        | <b>1064</b> | <b>60.5</b> | 1083        | 59.5       | 8      | 1089       | 59.1        | <b>1065</b> | <b>60.5</b> | 1063        | 60.6        |
| 429.mcf        | 8      | 1517       | 48.1        | <b>1519</b> | <b>48.0</b> | 1524        | 47.9       | 8      | 1522       | 47.9        | <b>1524</b> | <b>47.9</b> | 1524        | 47.9        |
| 445.gobmk      | 8      | 821        | 102         | <b>823</b>  | <b>102</b>  | 826         | 102        | 8      | 751        | 112         | 745         | 113         | <b>745</b>  | <b>113</b>  |
| 456.hmmmer     | 8      | <b>938</b> | <b>79.6</b> | 937         | 79.6        | 941         | 79.3       | 8      | 708        | 105         | <b>708</b>  | <b>105</b>  | 708         | 105         |
| 458.sjeng      | 8      | <b>996</b> | <b>97.2</b> | 997         | 97.1        | 996         | 97.2       | 8      | 895        | 108         | <b>892</b>  | <b>109</b>  | 891         | 109         |
| 462.libquantum | 8      | 3876       | 42.8        | <b>3889</b> | <b>42.6</b> | 3893        | 42.6       | 1      | 374        | 55.4        | <b>374</b>  | <b>55.3</b> | 375         | 55.3        |
| 464.h264ref    | 8      | 1139       | 155         | 1129        | 157         | <b>1131</b> | <b>157</b> | 8      | 1092       | 162         | <b>1085</b> | <b>163</b>  | 1082        | 164         |
| 471.omnetpp    | 8      | 1070       | 46.7        | <b>1071</b> | <b>46.7</b> | 1072        | 46.6       | 8      | 1044       | 47.9        | <b>1044</b> | <b>47.9</b> | 1046        | 47.8        |
| 473.astar      | 8      | 1093       | 51.4        | <b>1093</b> | <b>51.4</b> | 1094        | 51.3       | 8      | 1029       | 54.6        | 1027        | 54.7        | <b>1028</b> | <b>54.6</b> |
| 483.xalancbmk  | 8      | <b>681</b> | <b>81.0</b> | 681         | 81.0        | 683         | 80.8       | 8      | <b>681</b> | <b>81.0</b> | 681         | 81.0        | 683         | 80.8        |

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.

## Operating System Notes

'ulimit -s unlimited' was used to set the stack size to unlimited prior to run

## Platform Notes

BIOS Settings:  
Adjacent Cache Line Prefetch = Disabled (default Enabled)  
Hardware Prefetcher = Disabled (default Enabled)

## General Notes

All benchmarks compiled in 32-bit mode except 401.bzip2 and 456.hmmmer, for peak, are compiled in 64-bit mode  
taskset was used to bind processes to cores except for 462.libquantum peak  
OMP\_NUM\_THREADS set to number of processors  
KMP\_AFFINITY set to "physical,0"  
KMP\_STACKSIZE set to 64M



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## Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
462.libquantum: -DSPEC\_CPU\_LINUX  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:

-fast -inline-calloc -opt-malloc-options=3

C++ benchmarks:

-xT -ipo -O3 -no-prec-div -Wl,-z,muldefs  
-L/spec/cpu2006.1.1/lib -lsmartheap

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc

401.bzip2: /opt/intel/cce/10.1.015/bin/icc  
-L/opt/intel/cce/10.1.015/lib  
-I/opt/intel/cce/10.1.015/include

456.hmmer: /opt/intel/cce/10.1.015/bin/icc  
-L/opt/intel/cce/10.1.015/lib  
-I/opt/intel/cce/10.1.015/include

C++ benchmarks:

icpc



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## Peak Portability Flags

```

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

```

## Peak Optimization Flags

C benchmarks:

```

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -fast -ansi-alias
               -prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch

403.gcc: -fast -inline-calloc -opt-malloc-options=3

429.mcf: -fast -prefetch

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xT -O2 -ipo
           -no-prec-div -ansi-alias

456.hmmer: -fast -unroll2 -ansi-alias -opt-multi-version-aggressive

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4

462.libquantum: -fast -unroll4 -Ob0 -prefetch
                -opt-streaming-stores always -vec-guard-write
                -opt-malloc-options=3 -parallel -par-runtime-control

464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2
             -ansi-alias

```

C++ benchmarks:

```

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo
             -no-prec-div -ansi-alias -opt-ra-region-strategy=block
             -Wl,-z,muldefs -L/spec/cpu2006.1.1/lib -lsmartheap

473.astar: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo
           -no-prec-div -ansi-alias -opt-ra-region-strategy=routine
           -Wl,-z,muldefs -L/spec/cpu2006.1.1/lib -lsmartheap

483.xalancbmk: basepeak = yes

```



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## 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-ic10.1-int-linux64-revD.html>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.07.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic10.1-int-linux64-revD.xml>

<http://www.spec.org/cpu2006/flags/Intel-Linux64-Platform.20090713.07.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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