



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 127

PowerEdge T610 (Intel Xeon E5603, 1.60 GHz)

SPECint\_rate\_base2006 = 118

CPU2006 license: 55

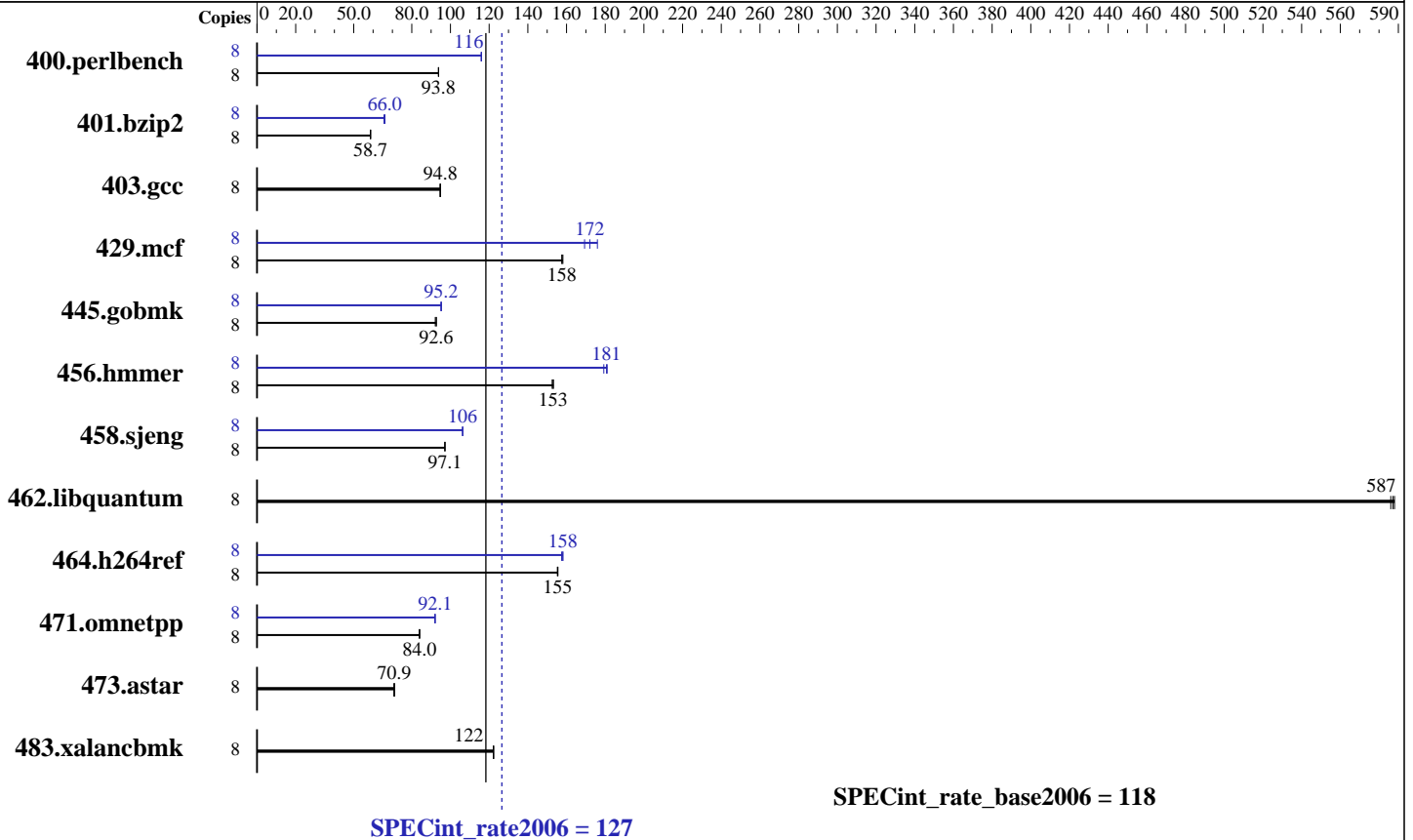
Test date: Jun-2011

Test sponsor: Dell Inc.

Hardware Availability: Feb-2011

Tested by: Dell Inc.

Software Availability: Jan-2011



## Hardware

CPU Name: Intel Xeon E5603  
 CPU Characteristics: 1600  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 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: 4 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 x 4 GB 2Rx4 PC3-10600R-9, ECC, running at 1066 MHz)  
 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++ 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



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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      | 832                | 93.9              | 833               | 93.8               | <b><u>833</u></b>  | <b><u>93.8</u></b> | 8      | 674                | 116                | 675               | 116                | <b><u>674</u></b> | <b><u>116</u></b>  |
| 401.bzip2      | 8      | 1317               | 58.6              | 1314              | 58.7               | <b><u>1316</u></b> | <b><u>58.7</u></b> | 8      | <b><u>1169</u></b> | <b><u>66.0</u></b> | 1169              | 66.1               | 1176              | 65.7               |
| 403.gcc        | 8      | 679                | 94.8              | <b><u>679</u></b> | <b><u>94.8</u></b> | 681                | 94.6               | 8      | 679                | 94.8               | <b><u>679</u></b> | <b><u>94.8</u></b> | 681               | 94.6               |
| 429.mcf        | 8      | 463                | 158               | 461               | 158                | <b><u>463</u></b>  | <b><u>158</u></b>  | 8      | 431                | 169                | <b><u>424</u></b> | <b><u>172</u></b>  | 415               | 176                |
| 445.gobmk      | 8      | 911                | 92.1              | 905               | 92.7               | <b><u>906</u></b>  | <b><u>92.6</u></b> | 8      | 880                | 95.3               | <b><u>881</u></b> | <b><u>95.2</u></b> | 883               | 95.1               |
| 456.hammer     | 8      | <b><u>488</u></b>  | <b><u>153</u></b> | 489               | 153                | 487                | 153                | 8      | 416                | 179                | <b><u>413</u></b> | <b><u>181</u></b>  | 412               | 181                |
| 458.sjeng      | 8      | 996                | 97.2              | 997               | 97.1               | <b><u>997</u></b>  | <b><u>97.1</u></b> | 8      | <b><u>911</u></b>  | <b><u>106</u></b>  | 910               | 106                | 911               | 106                |
| 462.libquantum | 8      | <b><u>282</u></b>  | <b><u>587</u></b> | 282               | 588                | 283                | 586                | 8      | <b><u>282</u></b>  | <b><u>587</u></b>  | 282               | 588                | 283               | 586                |
| 464.h264ref    | 8      | <b><u>1139</u></b> | <b><u>155</u></b> | 1138              | 156                | 1140               | 155                | 8      | <b><u>1120</u></b> | <b><u>158</u></b>  | 1120              | 158                | 1124              | 157                |
| 471.omnetpp    | 8      | 594                | 84.1              | 596               | 83.9               | <b><u>595</u></b>  | <b><u>84.0</u></b> | 8      | 544                | 92.0               | <b><u>543</u></b> | <b><u>92.1</u></b> | 543               | 92.1               |
| 473.astar      | 8      | 789                | 71.2              | 793               | 70.8               | <b><u>793</u></b>  | <b><u>70.9</u></b> | 8      | 789                | 71.2               | 793               | 70.8               | <b><u>793</u></b> | <b><u>70.9</u></b> |
| 483.xalancbmk  | 8      | 451                | 122               | 452               | 122                | <b><u>451</u></b>  | <b><u>122</u></b>  | 8      | 451                | 122                | 452               | 122                | <b><u>451</u></b> | <b><u>122</u></b>  |

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)  
Data Reuse = Disabled (Default = Enabled)

## General Notes

The Dell PowerEdge T610 and the Bull NovaScale T840 F2 models are electronically equivalent. The results have been measured on a Dell PowerEdge T610 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:  
-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

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## 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: basepeak = yes

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

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

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## Peak Optimization Flags (Continued)

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-ic12.0-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](mailto:webmaster@spec.org).

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