



# SPEC<sup>®</sup> CINT2006 Result

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Dell Inc.

SPECint<sup>®</sup>\_rate2006 = 236

PowerEdge T710 (Intel Xeon E5620, 2.40 GHz)

SPECint\_rate\_base2006 = 220

CPU2006 license: 55

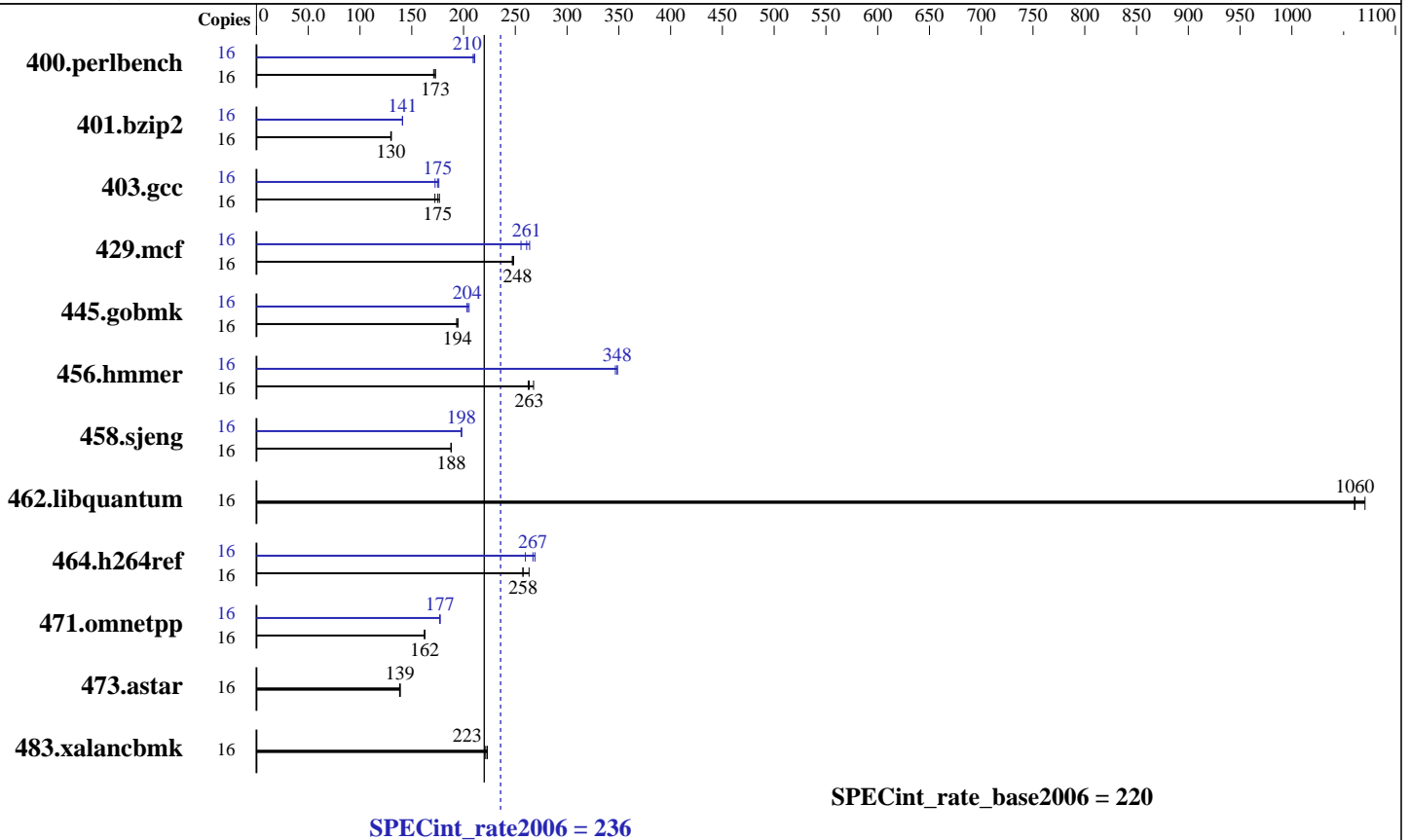
Test date: Jun-2011

Test sponsor: Dell Inc.

Hardware Availability: Mar-2010

Tested by: Dell Inc.

Software Availability: Jan-2011



## Hardware

CPU Name: Intel Xeon E5620  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.66 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core  
 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: 12 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  | 16     | 905     | 173   | 913         | 171        | <u>905</u>  | <u>173</u>  | 16     | 747        | 209        | 742         | 211        | <u>743</u> | <u>210</u>  |
| 401.bzip2      | 16     | 1190    | 130   | 1185        | 130        | <u>1188</u> | <u>130</u>  | 16     | 1094       | 141        | <u>1094</u> | <u>141</u> | 1096       | 141         |
| 403.gcc        | 16     | 729     | 177   | <u>735</u>  | <u>175</u> | 747         | 172         | 16     | 731        | 176        | <u>736</u>  | <u>175</u> | 747        | 172         |
| 429.mcf        | 16     | 591     | 247   | 588         | 248        | <u>589</u>  | <u>248</u>  | 16     | 571        | 256        | 553         | 264        | <u>559</u> | <u>261</u>  |
| 445.gobmk      | 16     | 863     | 195   | <u>864</u>  | <u>194</u> | 868         | 193         | 16     | 817        | 205        | 825         | 203        | <u>824</u> | <u>204</u>  |
| 456.hammer     | 16     | 558     | 268   | 569         | 262        | <u>567</u>  | <u>263</u>  | 16     | 431        | 347        | <u>428</u>  | <u>348</u> | 428        | 349         |
| 458.sjeng      | 16     | 1031    | 188   | <u>1029</u> | <u>188</u> | 1029        | 188         | 16     | <u>978</u> | <u>198</u> | 977         | 198        | 978        | 198         |
| 462.libquantum | 16     | 310     | 1070  | 313         | 1060       | <u>312</u>  | <u>1060</u> | 16     | 310        | 1070       | 313         | 1060       | <u>312</u> | <u>1060</u> |
| 464.h264ref    | 16     | 1345    | 263   | <u>1375</u> | <u>258</u> | 1376        | 257         | 16     | 1316       | 269        | <u>1326</u> | <u>267</u> | 1363       | 260         |
| 471.omnetpp    | 16     | 616     | 162   | 615         | 163        | <u>616</u>  | <u>162</u>  | 16     | 564        | 177        | 565         | 177        | <u>565</u> | <u>177</u>  |
| 473.astar      | 16     | 809     | 139   | 813         | 138        | <u>811</u>  | <u>139</u>  | 16     | 809        | 139        | 813         | 138        | <u>811</u> | <u>139</u>  |
| 483.xalancbmk  | 16     | 495     | 223   | <u>495</u>  | <u>223</u> | 499         | 221         | 16     | 495        | 223        | <u>495</u>  | <u>223</u> | 499        | 221         |

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 7200 > /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

Binaries were compiled on RHEL5.5  
The Dell PowerEdge T710 and  
the Bull NovaScale T860 F2 models are electronically equivalent.  
The results have been measured on a Dell PowerEdge T710 model



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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: -xSSE4.2 -ipo -O3 -no-prec-div  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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

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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-ic12.0-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).

Tested with SPEC CPU2006 v1.1.

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