



# SPEC® CINT2006 Result

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## Fujitsu

**SPECint®2006 = 50.6**

### CELSIUS W510, Intel Xeon E3-1280

**SPECint\_base2006 = 48.2**

CPU2006 license: 19

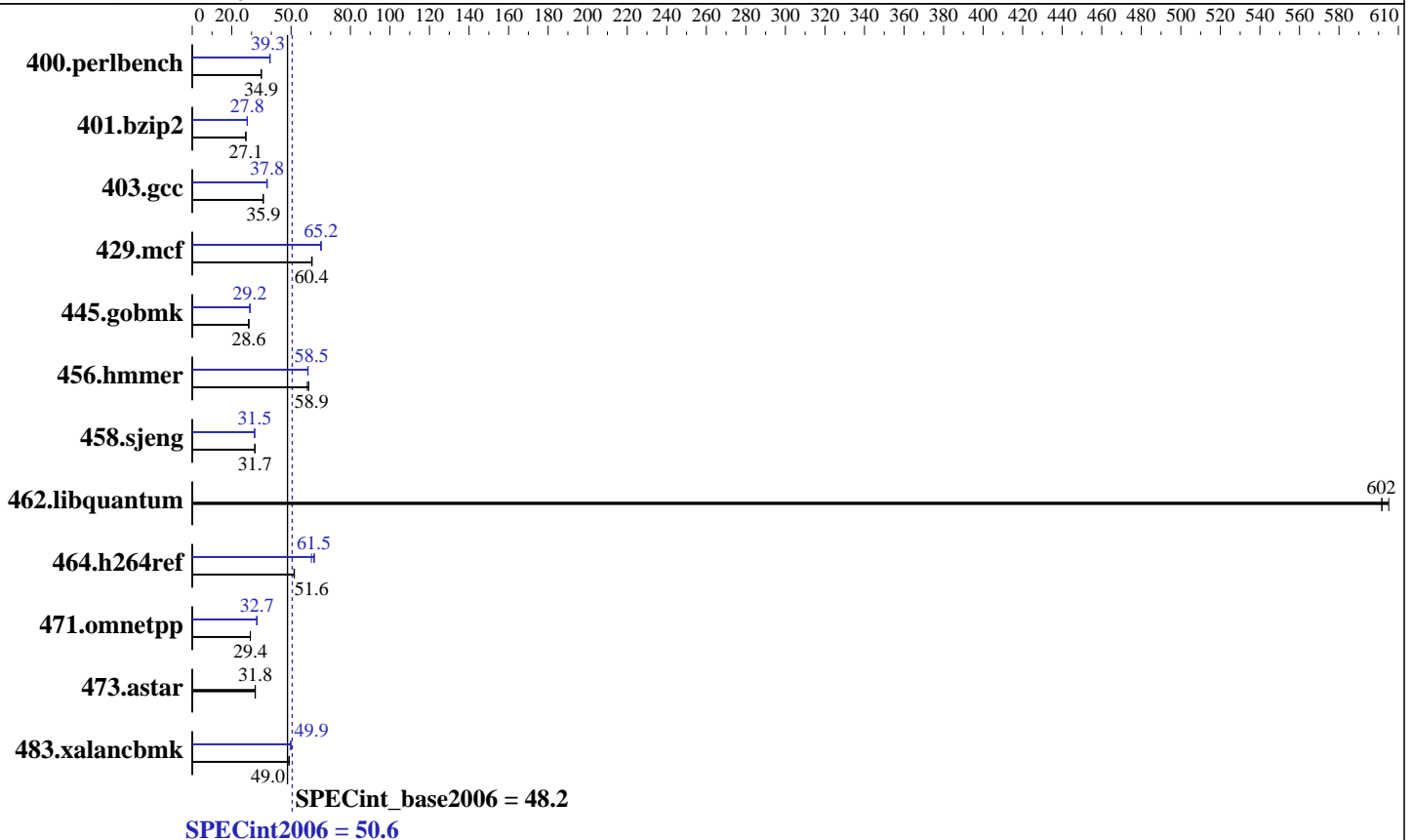
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Apr-2011

Hardware Availability: Apr-2011

Software Availability: Jan-2011



#### Hardware

CPU Name: Intel Xeon E3-1280  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.9 GHz  
 CPU MHz: 3500  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 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 (2 x 4 GB 2Rx8 PC3-10600U-9, non-ECC)  
 Disk Subsystem: 1 x SATA II, 400 GB, 7200 rpm  
 Other Hardware: None

#### Software

Operating System: SUSE Linux Enterprise Server 11 (x86\_64), kernel 2.6.32.12-0.6-default  
 Compiler: Intel C++ Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.2.137 Build 20110112  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run Level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V9.01



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## Results Table

| Benchmark      | Base               |                    |                   |                    |                   |                    | Peak        |             |                   |                    |                   |                    |
|----------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------|-------------|-------------------|--------------------|-------------------|--------------------|
|                | Seconds            | Ratio              | Seconds           | Ratio              | Seconds           | Ratio              | Seconds     | Ratio       | Seconds           | Ratio              | Seconds           | Ratio              |
| 400.perlbench  | 280                | 34.9               | <b><u>280</u></b> | <b><u>34.9</u></b> | 280               | 34.9               | <u>248</u>  | <u>39.3</u> | <b><u>248</u></b> | <b><u>39.3</u></b> | 249               | 39.3               |
| 401.bzip2      | 356                | 27.1               | <b><u>356</u></b> | <b><u>27.1</u></b> | 357               | 27.1               | <u>347</u>  | <u>27.8</u> | 347               | 27.8               | 346               | 27.9               |
| 403.gcc        | <b><u>224</u></b>  | <b><u>35.9</u></b> | 224               | 35.9               | 225               | 35.8               | <u>213</u>  | <u>37.8</u> | 213               | 37.8               | 213               | 37.8               |
| 429.mcf        | 150                | 60.7               | <b><u>151</u></b> | <b><u>60.4</u></b> | 151               | 60.4               | <u>140</u>  | <u>65.2</u> | 140               | 65.2               | 140               | 65.0               |
| 445.gobmk      | <b><u>367</u></b>  | <b><u>28.6</u></b> | 367               | 28.6               | 367               | 28.6               | <u>359</u>  | <u>29.2</u> | <b><u>359</u></b> | <b><u>29.2</u></b> | 359               | 29.2               |
| 456.hmmmer     | 158                | 58.9               | <b><u>158</u></b> | <b><u>58.9</u></b> | 160               | 58.2               | <u>159</u>  | <u>58.5</u> | 159               | 58.5               | 160               | 58.4               |
| 458.sjeng      | 381                | 31.7               | <b><u>381</u></b> | <b><u>31.7</u></b> | 383               | 31.6               | <u>384</u>  | <u>31.5</u> | <b><u>384</u></b> | <b><u>31.5</u></b> | 384               | 31.5               |
| 462.libquantum | <b><u>34.4</u></b> | <b><u>602</u></b>  | 34.2              | 605                | 34.4              | 602                | <u>34.4</u> | <u>602</u>  | 34.2              | 605                | 34.4              | 602                |
| 464.h264ref    | 430                | 51.5               | <b><u>429</u></b> | <b><u>51.6</u></b> | 428               | 51.7               | <u>358</u>  | <u>61.8</u> | 367               | 60.3               | <b><u>360</u></b> | <b><u>61.5</u></b> |
| 471.omnetpp    | 213                | 29.4               | 213               | 29.4               | <b><u>213</u></b> | <b><u>29.4</u></b> | <u>191</u>  | <u>32.8</u> | <b><u>191</u></b> | <b><u>32.7</u></b> | 192               | 32.6               |
| 473.astar      | 221                | 31.8               | 220               | 31.9               | <b><u>220</u></b> | <b><u>31.8</u></b> | <u>221</u>  | <u>31.8</u> | 220               | 31.9               | <b><u>220</u></b> | <b><u>31.8</u></b> |
| 483.xalancbmk  | <b><u>141</u></b>  | <b><u>49.0</u></b> | 141               | 49.0               | 141               | 48.9               | <u>138</u>  | <u>49.9</u> | 139               | 49.8               | <b><u>138</u></b> | <b><u>49.9</u></b> |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stack size to unlimited prior to run
Hugepages were enabled by:
mount -t hugetlbfs nodev /mnt/hugepages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

BIOS settings:  
Hyper-Threading Technology = Disabled

## General Notes

OMP\_NUM\_THREADS set to number of cores  
KMP\_AFFINITY set to granularity=fine,scatter

## Base Compiler Invocation

C benchmarks:  
icc -m64  
  
C++ benchmarks:  
icpc -m64



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## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -DSPEC\_CPU\_LP64  
403.gcc: -DSPEC\_CPU\_LP64  
429.mcf: -DSPEC\_CPU\_LP64  
445.gobmk: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
471.omnetpp: -DSPEC\_CPU\_LP64  
473.astar: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:  
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

C++ benchmarks:  
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs  
-L/opt/smartheap/intel64 -lsmartheap64  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

## Base Other Flags

C benchmarks:  
403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):  
icc -m64

400.perlbench: icc -m32

429.mcf: icc -m32

445.gobmk: icc -m32

464.h264ref: icc -m32

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## Peak Compiler Invocation (Continued)

C++ benchmarks (except as noted below):  
icpc -m32

473.astar: icpc -m64

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
401.bzip2: -DSPEC\_CPU\_LP64  
403.gcc: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
473.astar: -DSPEC\_CPU\_LP64  
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) -opt-prefetch  
-ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

401.bzip2: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div -prof-use(pass 2) -auto-ilp32 -opt-prefetch  
-ansi-alias

403.gcc: -xAVX -ipo -O3 -no-prec-div -inline-alloc  
-opt-malloc-options=3 -auto-ilp32  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

429.mcf: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32  
-ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-auto-ilp32 -ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
-ansi-alias  
-B /usr/share/libhugetlbfs/ -Wl,-melf\_x86\_64 -Wl,-hugetlbfs-link=BDT

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## Peak Optimization Flags (Continued)

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

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  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

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)  
-opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs  
-L/opt/smartheap/ia32 -lsmartheap  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

473.astar: basepeak = yes

483.xalancbmk: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias  
-Wl,-z,muldefs -L/opt/smartheap/ia32 -lsmartheap  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

## 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/Platform.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>  
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