



# SPEC® CINT2006 Result

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## Fujitsu

**SPECint®2006 = 40.5**

## CELSIUS M720 (Intel Xeon E5-1603)

**SPECint\_base2006 = 38.3**

CPU2006 license: 19

Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Mar-2012

Hardware Availability: Mar-2012

Software Availability: Feb-2012



### Hardware

CPU Name: Intel Xeon E5-1603  
 CPU Characteristics:  
 CPU MHz: 2800  
 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: 10 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 32 GB (8 x 4 GB 2Rx8 PC3-12800E-11, ECC, running at 1067 MHz and CL8)  
 Disk Subsystem: 1 x SATA III, 500 GB, 7200 rpm  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 6.2, 2.6.32-220.0.el6.x86\_64  
 Compiler: C/C++: Version 12.1.3.293 of Intel C++ Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi - user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap 10 (Multi-Core)



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	<b><u>395</u></b>	<b><u>24.7</u></b>	394	24.8	396	24.7	331	29.5	331	29.5	<b><u>331</u></b>	<b><u>29.5</u></b>
401.bzip2	516	18.7	<b><u>515</u></b>	<b><u>18.7</u></b>	514	18.8	506	19.1	<b><u>506</u></b>	<b><u>19.1</u></b>	506	19.1
403.gcc	306	26.3	<b><u>306</u></b>	<b><u>26.3</u></b>	307	26.3	301	26.7	<b><u>302</u></b>	<b><u>26.7</u></b>	302	26.7
429.mcf	167	54.7	<b><u>166</u></b>	<b><u>55.0</u></b>	165	55.4	167	54.7	<b><u>166</u></b>	<b><u>55.0</u></b>	165	55.4
445.gobmk	<b><u>501</u></b>	<b><u>20.9</u></b>	501	20.9	501	20.9	493	21.3	493	21.3	<b><u>493</u></b>	<b><u>21.3</u></b>
456.hammer	<b><u>218</u></b>	<b><u>42.9</u></b>	218	42.8	218	42.9	<b><u>212</u></b>	<b><u>43.9</u></b>	212	43.9	213	43.9
458.sjeng	530	22.8	<b><u>530</u></b>	<b><u>22.8</u></b>	530	22.8	530	22.8	531	22.8	<b><u>530</u></b>	<b><u>22.8</u></b>
462.libquantum	24.9	834	<b><u>24.9</u></b>	<b><u>834</u></b>	24.9	834	<b><u>24.3</u></b>	<b><u>854</u></b>	24.3	854	24.3	854
464.h264ref	<b><u>548</u></b>	<b><u>40.4</u></b>	548	40.4	548	40.4	499	44.4	<b><u>500</u></b>	<b><u>44.2</u></b>	502	44.1
471.omnetpp	<b><u>289</u></b>	<b><u>21.6</u></b>	290	21.6	282	22.1	232	27.0	<b><u>232</u></b>	<b><u>26.9</u></b>	240	26.0
473.astar	<b><u>288</u></b>	<b><u>24.4</u></b>	289	24.3	288	24.4	<b><u>288</u></b>	<b><u>24.4</u></b>	289	24.3	288	24.4
483.xalancbmk	166	41.7	167	41.4	<b><u>167</u></b>	<b><u>41.4</u></b>	155	44.7	<b><u>155</u></b>	<b><u>44.6</u></b>	155	44.6

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

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

BIOS settings:  
Frequency Floor Override = Enabled

## General Notes

Environment variables set by runspec before the start of the run:  
KMP\_AFFINITY = "granularity=fine,scatter"  
LD\_LIBRARY\_PATH = "/work/cpu2006/libs/32:/work/cpu2006/libs/64"  
OMP\_NUM\_THREADS = "4"

Binaries compiled on a system with  
2x Xeon E5-2650 CPU + 64 GB memory using  
Red Hat Enterprise Linux Server release 6.2 (Santiago)  
The RPMs glibc-static-2.12-1.47.el6.x86\_64.rpm  
and glibc-static-2.12-1.47.el6.i686.rpm  
were added to enable static linking.

Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/redhat\_transparent\_hugepage/enabled



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## Base Compiler Invocation

C benchmarks:  
icc -m64

C++ benchmarks:  
icpc -m64

## 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:  
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-Wl,-z,muldefs -L/opt/SmartHeap/lib64 -lsmartheap64

## Base Other Flags

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

## Peak Compiler Invocation

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

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## Peak Compiler Invocation (Continued)

400.perlbench: `icc -m32`

445.gobmk: `icc -m32`

464.h264ref: `icc -m32`

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`

429.mcf: `-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: `-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 -ansi-alias`

401.bzip2: `-xSSE4.2(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-calloc  
-opt-malloc-options=3 -auto-ilp32`

429.mcf: `basepeak = yes`

445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-ansi-alias`

456.hmmer: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
-ansi-alias`

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## Peak Optimization Flags (Continued)

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

462.libquantum: -xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch  
-auto-p32

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)  
-opt-ra-region-strategy=block -ansi-alias  
-Wl,-z,muldefs -L/opt/SmartHeap/lib -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias  
-Wl,-z,muldefs -L/opt/SmartHeap/lib -lsmartheap

## 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-ic12.1-official-linux64.20111122.html>  
<http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20120313.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml>  
<http://www.spec.org/cpu2006/flags/Fujitsu-Platform.20120313.xml>



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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