



# SPEC<sup>®</sup> CINT2006 Result

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IBM Corporation

SPECint<sup>®</sup>2006 = **NC**

IBM System x3455 (AMD Opteron 2347)

SPECint\_base2006 = **NC**

CPU2006 license: 11  
Test sponsor: IBM Corporation  
Tested by: Advanced Micro Devices

Test date: Aug-2007  
Hardware Availability: Nov-2007  
Software Availability: Oct-2007

**SPEC has determined that this result was not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the submitter reported that the result would not meet the 3 month availability requirement in the SPEC CPU2006 run rules due to a change in the availability date of the system.**

- 400.perlbench
- 401.bzip2
- 403.gcc
- 429.mcf
- 445.gobmk
- 456.hmmer
- 458.sjeng
- 462.libquantum
- 464.h264ref
- 471.omnettp
- 473.astar
- 483

**Non-Compliant**

### Hardware

CPU Name: AMD Opteron 2347  
CPU Characteristics:  
CPU MHz: 1900  
FPU: Integrated  
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
CPU(s) orderable: 1, 2 chips  
Primary Cache: 64 KB I + 64 KB D on chip per core

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### Software

Operating System: SuSE Linux Enterprise Server 10 SP1 64-bit kernel  
Compiler: The Portland Group (PGI)  
PGI pgcc 7.1-0 C Compiler  
PGI pgCC 7.1-0 C++ Compiler  
PathScale Compiler Suite, Release 3.0  
Auto Parallel: No  
File System: ReiserFS

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### Hardware (Continued)

Secondary Cache: 512 KB I+D on chip per core  
L3 Cache: 2 MB I+D on chip per chip  
Other Cache: None  
Memory: 16 GB (8 x 2GB, DDR2-667 CL5 ECC Reg Dual Rank)  
Disk Subsystem: 1 x 160 GB Serial ATA, 7200 RPM  
Other Hardware: None

### Software (Continued)

System State: Multi-user, run level 3  
Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Compiler Software: SmartHeap 8.0 32-bit Library for Linux

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
401.bzip2	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
403.gcc	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
429.mcf	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
445.gobmk	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
456.hammer	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
458.sjeng	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
462.libquantum	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
464.h264ref	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
471.omnetpp	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
473.astar	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
483.xalancbmk	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

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 environment stack size  
'ulimit -l 2457600' was used to set environment locked pages in memory quantity  
'numactl' was used to bind copies to the cores  
Set vm/nr\_hugepages=1200 in /etc/sysctl.conf  
mount -t hugetlbfs nodev /mnt/hugepages  
Environment variable PGI\_HUGE\_PAGES set to 150



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## Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

## 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  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Base Optimization Flags

-fast -Mipa=fast -Mipa=inline -Mipa=noarg -Mfprelaxed  
-Msmartalloc=huge:840 -tp barcelona-64 -Bstatic\_pgi

C++ benchmarks:

-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448  
--zc\_eh -tp barcelona -Bstatic\_pgi



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## Base Other Flags

C benchmarks:  
-w  
C++ benchmarks:  
-w

## Peak Compiler Invocation

C benchmarks (except as noted below):  
pgcc  
400.perlbench: pathcc  
403.gcc: pathcc  
445.gobmk: pathcc  
464.h264ref: pathcc  
C++ benchmarks (except as noted below):  
pgcpp  
483.xalanbmk: pathCC

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -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

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## Peak Portability Flags (Continued)

464.h264ref: -DSPEC\_CPU\_LP64  
483.xalanbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-LNO:opt=0

401.bzip2: -Mpf1(pass 1) -Mpfo(pass 2) -fast -O4  
-Msmartalloc=huge:448 -tp barcelona-64 -Bstatic\_pgi

403.gcc: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:fast

429.mcf: -fastsse -Mipa=fast -Mipa=inline:1 -Msmartalloc=huge:420  
-tp barcelona -Bstatic\_pgi

45.gobm: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:alias=disjoint -LNO:simd=0 -LNO:minvariant=off  
-Mip1:retype\_expr=on

-fast -Msmartalloc=huge:448 -Mfp1relaxed -Msafeptr  
-Mipa=const -Mipa=ptr -Mipa=arg -tp barcelona-64  
-Bstatic\_pgi

442.fjeng: -Mpf1(pass 1) -Mipa=fast(pass 2) -Mipa=inline:1(pass 2)  
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fast  
-Msmartalloc=huge:448 -Mfp1relaxed -tp barcelona-64  
-Bstatic\_pgi

462.libquantum: -fast -Mfp1relaxed -Msmartalloc=huge:448 -Munroll=m:4  
-Mipa=fast -Mipa=inline -Mipa=noarg -Bstatic\_pgi

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## Peak Optimization Flags (Continued)

464.h264ref: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-IPA:plimit=20000 -OPT:alias,disjoint -LNO:prefetch=0

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: basepeak = yes

483.xalancbmk: -Ofast -m32 -O3 -unroll\_times\_max=8  
-L/cpu2006/workdir/20090714/SmartHeap -lsmartheap

## Peak Other Flags

Same as Base Other Flags

The flags file that was used to format this result can be browsed at  
<http://www.spec.org/cpu2006/flags/amd814GH-flags.20090714.html>

You can also download the XML flags source by saving the following link:  
<http://www.spec.org/cpu2006/flags/amd814GH-flags.20090714.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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