



SPEC® CINT2006 Result

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IBM Corporation

SPECint®_rate2006 = 1020

IBM System x 3850 X5 (Intel Xeon E7-4860)

SPECint_rate_base2006 = 947

CPU2006 license: 11

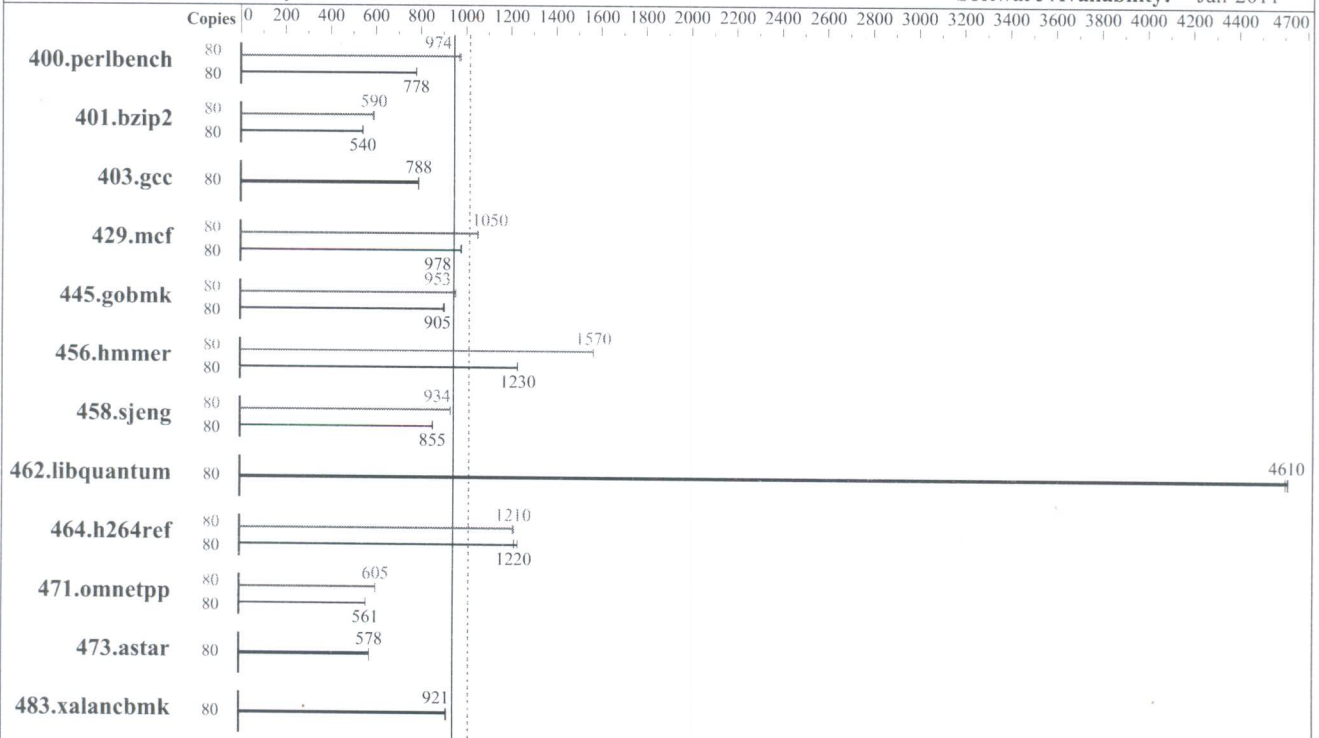
Test sponsor: IBM Corporation

Test date: May-2011

Tested by: IBM Corporation

Hardware Availability: May-2011

Software Availability: Jan-2011



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Hardware

CPU Name: Intel Xeon E7-4860
CPU Characteristics: Intel Turbo Boost Technology up to 2.67 GHz
CPU MHz: 2267
FPU: Integrated
CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable: 1,2,3,4 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: 24 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (64 x 8 GB 4Rx8 PC3-8500R-7, ECC)
Disk Subsystem: 2 x 147 GB 15k RPM SAS, RAID 0
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 | 80 | 1005 | 778 | 1006 | 777 | 1004 | 778 | 80 | 807 | 969 | 803 | 974 | 800 | 977 |
| 401.bzip2 | 80 | 1425 | 542 | 1429 | 540 | 1432 | 539 | 80 | 1320 | 585 | 1308 | 590 | 1309 | 590 |
| 403.gcc | 80 | 818 | 787 | 817 | 788 | 816 | 790 | 80 | 818 | 787 | 817 | 788 | 816 | 790 |
| 429.mcf | 80 | 746 | 978 | 744 | 981 | 747 | 977 | 80 | 694 | 1050 | 691 | 1060 | 692 | 1050 |
| 445.gobmk | 80 | 927 | 905 | 926 | 906 | 932 | 901 | 80 | 877 | 957 | 881 | 953 | 881 | 953 |
| 456.hmmer | 80 | 606 | 1230 | 606 | 1230 | 606 | 1230 | 80 | 476 | 1570 | 476 | 1570 | 477 | 1570 |
| 458.sjeng | 80 | 1134 | 853 | 1132 | 855 | 1131 | 856 | 80 | 1037 | 934 | 1036 | 935 | 1036 | 934 |
| 462.libquantum | 80 | 359 | 4610 | 360 | 4600 | 359 | 4620 | 80 | 359 | 4610 | 360 | 4600 | 359 | 4620 |
| 464.h264ref | 80 | 1454 | 1220 | 1455 | 1220 | 1436 | 1230 | 80 | 1454 | 1220 | 1459 | 1210 | 1462 | 1210 |
| 471.omnetpp | 80 | 891 | 561 | 890 | 562 | 891 | 561 | 80 | 826 | 605 | 829 | 603 | 826 | 606 |
| 473.astar | 80 | 972 | 578 | 971 | 578 | 970 | 579 | 80 | 972 | 578 | 971 | 578 | 970 | 579 |
| 483.xalancbmk | 80 | 600 | 921 | 599 | 921 | 602 | 917 | 80 | 600 | 921 | 599 | 921 | 602 | 917 |

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
echo 1 > /proc/sys/vm/zone_reclaim_mode
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 52000 > /proc/sys/vm/nr_hugepages
export HUGETLB MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

Platform Notes

BIOS Settings:
Turbo Boost Power Optimization set to Traditional

General Notes

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

Continued on next page

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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.hmmmer: -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.hmmmer: -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

Continued on next page

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