SPEC® CINT2006 Result
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IBM Corporation

SPECint®_rate2006 = 479

IBM System x3550 M4 (Intel Xeon E5-2658)

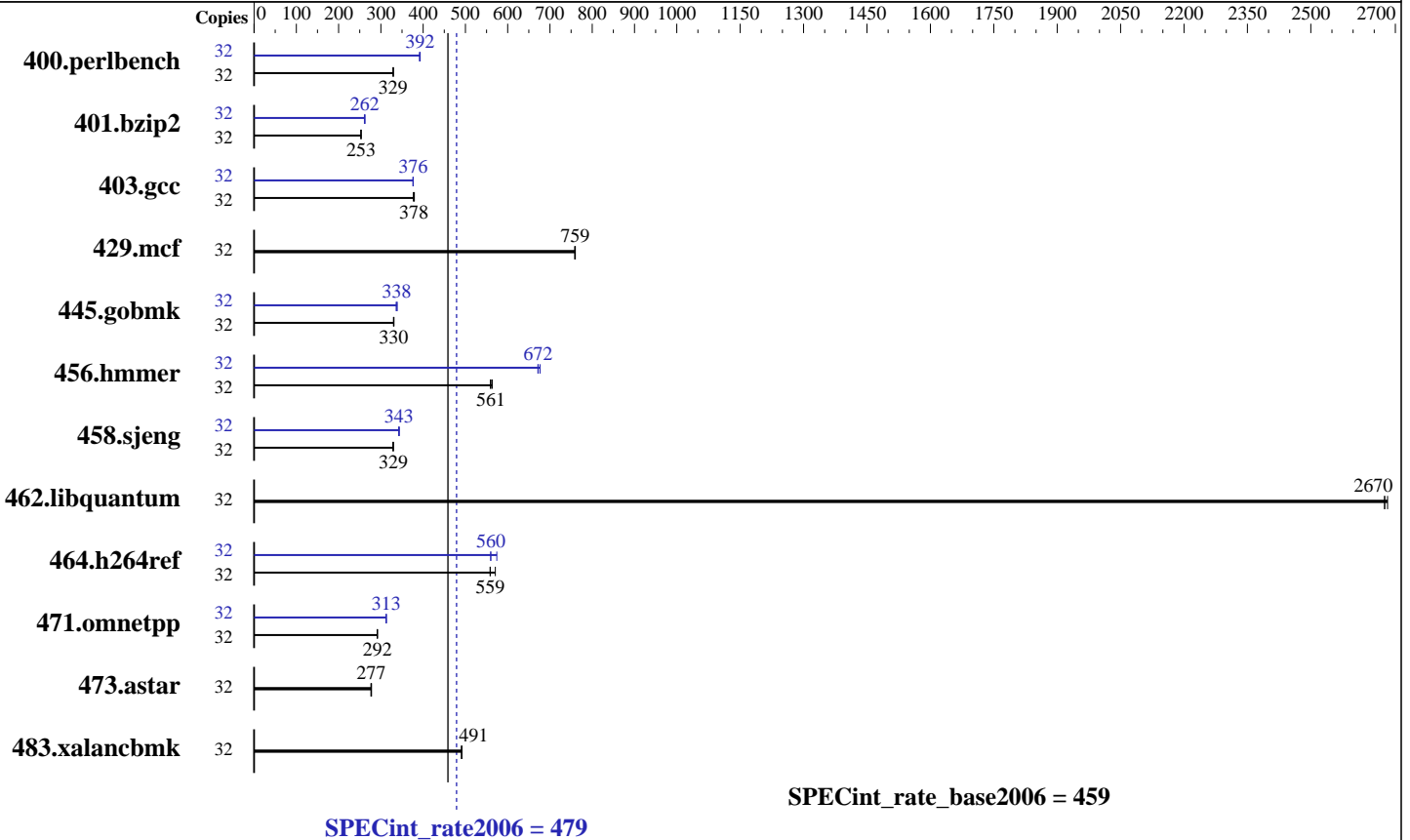SPECint_rate_base2006 = 459

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Nov-2012
Hardware Availability: Mar-2012
Software Availability: Jun-2012

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400.perlbench	32 / 32	392 / 329
401.bzip2	32 / 32	262 / 253
403.gcc	32 / 32	376 / 378
429.mcf	32	759
445.gobmk	32 / 32	338 / 330
456.hmmer	32 / 32	672 / 561
458.sjeng	32 / 32	343 / 329
462.libquantum	32	2670
464.h264ref	32 / 32	560 / 559
471.omnetpp	32 / 32	313 / 292
473.astar	32	277
483.xalancbmk	32	491

Hardware

CPU Name:	Intel Xeon E5-2658
CPU Characteristics:	Intel Turbo Boost Technology up to 2.40 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	1 x 1 TB SAS, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.3 (Santiago) 2.6.32-279.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	ext4
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	32	951	329	949	329	**950**	**329**	32	796	393	799	391	**797**	**392**
401.bzip2	32	1218	253	**1220**	**253**	1223	253	32	1183	261	**1178**	**262**	1178	262
403.gcc	32	679	379	**681**	**378**	684	377	32	684	377	**685**	**376**	685	376
429.mcf	32	**384**	**759**	385	759	384	760	32	**384**	**759**	385	759	384	760
445.gobmk	32	1014	331	**1016**	**330**	1018	330	32	**994**	**338**	991	339	999	336
456.hmmer	32	**533**	**561**	534	559	530	564	32	441	677	**444**	**672**	445	671
458.sjeng	32	1179	328	**1176**	**329**	1175	330	32	1127	344	1131	342	**1130**	**343**
462.libquantum	32	247	2680	**248**	**2670**	248	2670	32	247	2680	**248**	**2670**	248	2670
464.h264ref	32	1268	558	1241	571	**1267**	**559**	32	1233	574	**1264**	**560**	1265	560
471.omnetpp	32	**686**	**292**	685	292	686	291	32	639	313	641	312	**640**	**313**
473.astar	32	813	276	809	278	**810**	**277**	32	813	276	809	278	**810**	**277**
483.xalancbmk	32	450	491	**450**	**491**	449	492	32	450	491	**450**	**491**	449	492

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

Submit Notes

    The numactl mechanism was used to bind copies to processors. The config file option 'submit'
    was used to generate numactl commands to bind each copy to a specific processor.
    For details, please see the config file.

Operating System Notes

    Stack size set to unlimited using "ulimit -s unlimited"
    Zone reclaim mode enabled with:
    echo 1 > /proc/sys/vm/zone_reclaim_mode

Platform Notes

    BIOS Settings:
    Operating Mode set to Maximum Performance
    Sysinfo program /home/SPECcpu-v1.2/config/sysinfo.rev6800
    $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
    running on x3550M4 Mon Nov 5 15:18:19 2012

    This section contains SUT (System Under Test) info as seen by
    some common utilities. To remove or add to this section, see:
      http://www.spec.org/cpu2006/Docs/config.html#sysinfo

    From /proc/cpuinfo
       model name : Intel(R) Xeon(R) CPU E5-2658 0 @ 2.10GHz
          2 "physical id"s (chips)
          32 "processors"
       cores, siblings (Caution: counting these is hw and system dependent.   The

Continued on next page

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Platform Notes (Continued)

```
    following excerpts from /proc/cpuinfo might not be reliable.  Use with
    caution.)
       cpu cores : 8
       siblings  : 16
       physical 0: cores 0 1 2 3 4 5 6 7
       physical 1: cores 0 1 2 3 4 5 6 7
    cache size : 20480 KB

  From /proc/meminfo
    MemTotal:       132230468 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

  /usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.3 (Santiago)

  From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
    Linux x3550M4 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
    x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Nov 5 15:15

  SPEC is set to: /home/SPECcpu-v1.2
    Filesystem     Type     Size  Used Avail Use% Mounted on
    /dev/mapper/vg_x3550m4-lv_home
                   ext4     862G  4.3G  814G   1% /home

  Additional information from dmidecode:
    Memory:
     16x Samsung M393B1K70DH0-CK0 8 GB 1600 MHz 2 rank

  (End of data from sysinfo program)
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 LD_LIBRARY_PATH = "/home/SPECcpu-v1.2/libs/32:/home/SPECcpu-v1.2/libs/64"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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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 -opt-mem-layout-trans=3`

C++ benchmarks:
    `-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3`
    `-Wl,-z,muldefs -L/smartheap -lsmartheap`

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`

C++ benchmarks:
    `icpc -m32`

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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)
               -auto-ilp32

    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

      403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div

      429.mcf: basepeak = yes

    445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
               -ansi-alias -opt-mem-layout-trans=3

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

    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

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
```

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
```

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Peak Optimization Flags (Continued)

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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.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/IBM-Platform-Flags-V1.2-SNB-C.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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