SPEC® CINT2006 Result

HITACHI

Compute Blade 520X (Intel Xeon E7-8893 v3)

$SPECint^®_rate2006 = $ 1780

$SPECint_rate_base2006 = $ 1700

SPECint_rate_base2006 = 1700

SPECint_rate2006 = 1780

Benchmark	Copies	Base	Peak
400.perlbench	64	1190	1490
401.bzip2	64	925	983
403.gcc	64	1340	
429.mcf	64	2260	
445.gobmk	64	1060	1080
456.hmmer	64	2470	2820
458.sjeng	64	1120	1180
462.libquantum	64	17600	
464.h264ref	64	1870	1920
471.omnetpp	64	859	903
473.astar	64	1010	
483.xalancbmk	64	2080	

Hardware

CPU Name: Intel Xeon E7-8893 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz: 3200
FPU: Integrated
CPU(s) enabled: 32 cores, 8 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 2,4,8 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: 45 MB I+D on chip per chip
Other Cache: None
Memory: 2 TB (128 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 2 x 450 GB SAS, 10000 RPM, RAID1
Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 7.1 (Maipo)
3.10.0-229.el7.x86_64
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel: No
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0

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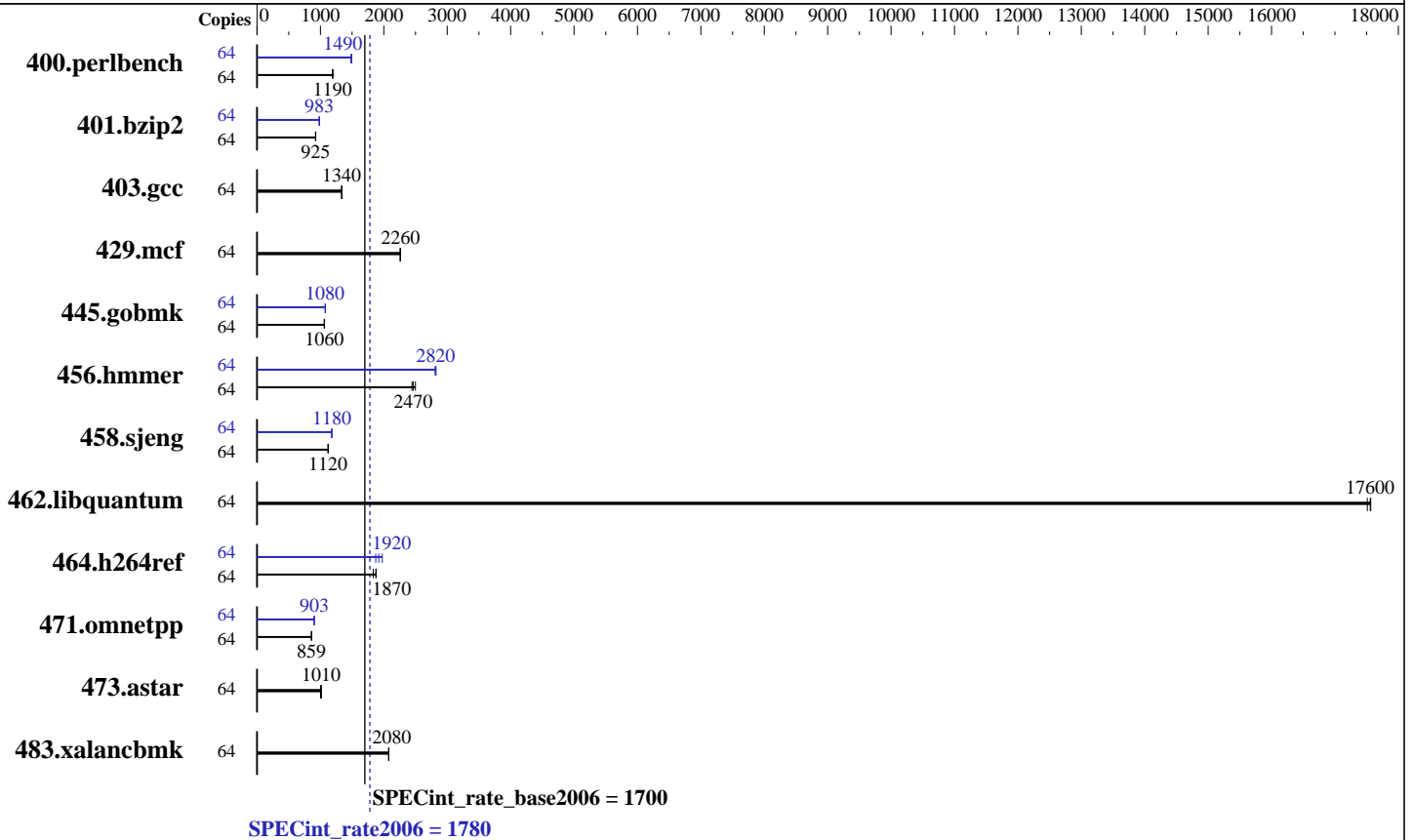SPECint_rate_base2006 = 1700

CPU2006 license: 35
Test sponsor: HITACHI
Tested by: HITACHI

Test date: Aug-2015
Hardware Availability: Jun-2015
Software Availability: Mar-2015

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	**524**	**1190**	522	1200	525	1190	64	422	1480	**420**	**1490**	419	1490
401.bzip2	64	670	922	667	926	**668**	**925**	64	**628**	**983**	628	984	629	982
403.gcc	64	385	1340	387	1330	**385**	**1340**	64	385	1340	387	1330	**385**	**1340**
429.mcf	64	258	2260	259	2260	**258**	**2260**	64	258	2260	259	2260	**258**	**2260**
445.gobmk	64	**632**	**1060**	632	1060	633	1060	64	622	1080	624	1080	**624**	**1080**
456.hmmer	64	239	2500	**242**	**2470**	244	2440	64	211	2820	213	2810	**212**	**2820**
458.sjeng	64	690	1120	690	1120	**690**	**1120**	64	656	1180	657	1180	**656**	**1180**
462.libquantum	64	**75.5**	**17600**	75.7	17500	75.5	17600	64	**75.5**	**17600**	75.7	17500	75.5	17600
464.h264ref	64	773	1830	**756**	**1870**	754	1880	64	717	1980	756	1870	**738**	**1920**
471.omnetpp	64	465	860	466	859	**465**	**859**	64	443	904	444	902	**443**	**903**
473.astar	64	443	1010	448	1000	**444**	**1010**	64	443	1010	448	1000	**444**	**1010**
483.xalancbmk	64	**213**	**2080**	212	2080	213	2080	64	**213**	**2080**	212	2080	213	2080

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"

Platform Notes

    BIOS configuration:
     C-State = Disable
     C1 Enhanced Mode = Disable
     EnergyEfficientTurbo = Disable
     ProcessorPerformanceStates = Disable
     UncoreFrequencyScaling = Disable
     Platform Controlled Type = Maximum Performance
     Memory Power Management = Disable
     Patrol Scrub = Disable

     Sysinfo program /home/spec/speccpu2006/cpu2006/config/sysinfo.rev6914
     $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
     running on localhost.localdomain Thu Aug 20 09:31:23 2015

     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

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E7-8893 v3 @ 3.20GHz
      8 "physical id"s (chips)
      64 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 4
      siblings  : 8
      physical 0: cores 1 5 16 20
      physical 1: cores 1 5 16 20
      physical 2: cores 1 5 16 20
      physical 3: cores 1 5 16 20
      physical 4: cores 1 5 16 20
      physical 5: cores 1 5 16 20
      physical 6: cores 1 5 16 20
      physical 7: cores 1 5 16 20
   cache size : 46080 KB

From /proc/meminfo
   MemTotal:      2112900508 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.1 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.1"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.1:ga:server

uname -a:
   Linux localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Thu Jan 29 18:37:38
   EST 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 17 23:52

SPEC is set to: /home/spec/speccpu2006/cpu2006
   Filesystem          Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs   364G   13G  352G   4% /home
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
   reads system data which is "intended to allow hardware to be accurately
```

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Platform Notes (Continued)

determined", but the intent may not be met, as there are frequent changes to
hardware, firmware, and the "DMTF SMBIOS" standard.

```
  BIOS HITACHI 09-14 07/09/2015
  Memory:
  64x NO DIMM Unknown
  1x Samsung M39.A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz
  127x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

 (End of data from sysinfo program)
```

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/spec/speccpu2006/cpu2006/libs/32:/home/spec/speccpu2006/cpu2006/libs/64:/home/spec/speccpu2006/cpu2006/sh"

```
 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/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>
 BladeSymphony BS520X, BladeSymphony BS2500 and Hitachi Compute Blade 520X are electronically equivalent.
 The results have been measured on a Hitachi Compute Blade 520X.
```

Base Compiler Invocation

C benchmarks:

    icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks:

    icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Base Portability Flags

      400.perlbench: -DSPEC_CPU_LINUX_IA32
      462.libquantum: -DSPEC_CPU_LINUX
      483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:

    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
    -opt-mem-layout-trans=3

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Base Optimization Flags (Continued)

C++ benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmartheap
```

Base Other Flags

C benchmarks:

```
403.gcc: -Dalloca=_alloca
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
```
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

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:

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Peak Optimization Flags (Continued)

400.perlbench: `-xCORE-AVX2(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: `-xCORE-AVX2(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: basepeak = yes

429.mcf: basepeak = yes

445.gobmk: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)`
`-ansi-alias -opt-mem-layout-trans=3`

456.hmmer: `-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

458.sjeng: `-xCORE-AVX2(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: `-xCORE-AVX2(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: `-xCORE-AVX2(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/sh -lsmartheap`

473.astar: basepeak = yes

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.20150729.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.20150729.xml

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