SPEC® CINT2006 Result

Hewlett-Packard Company

ProLiant XL170r Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

SPECint®_rate2006 = 1360

SPECint_rate_base2006 = 1310
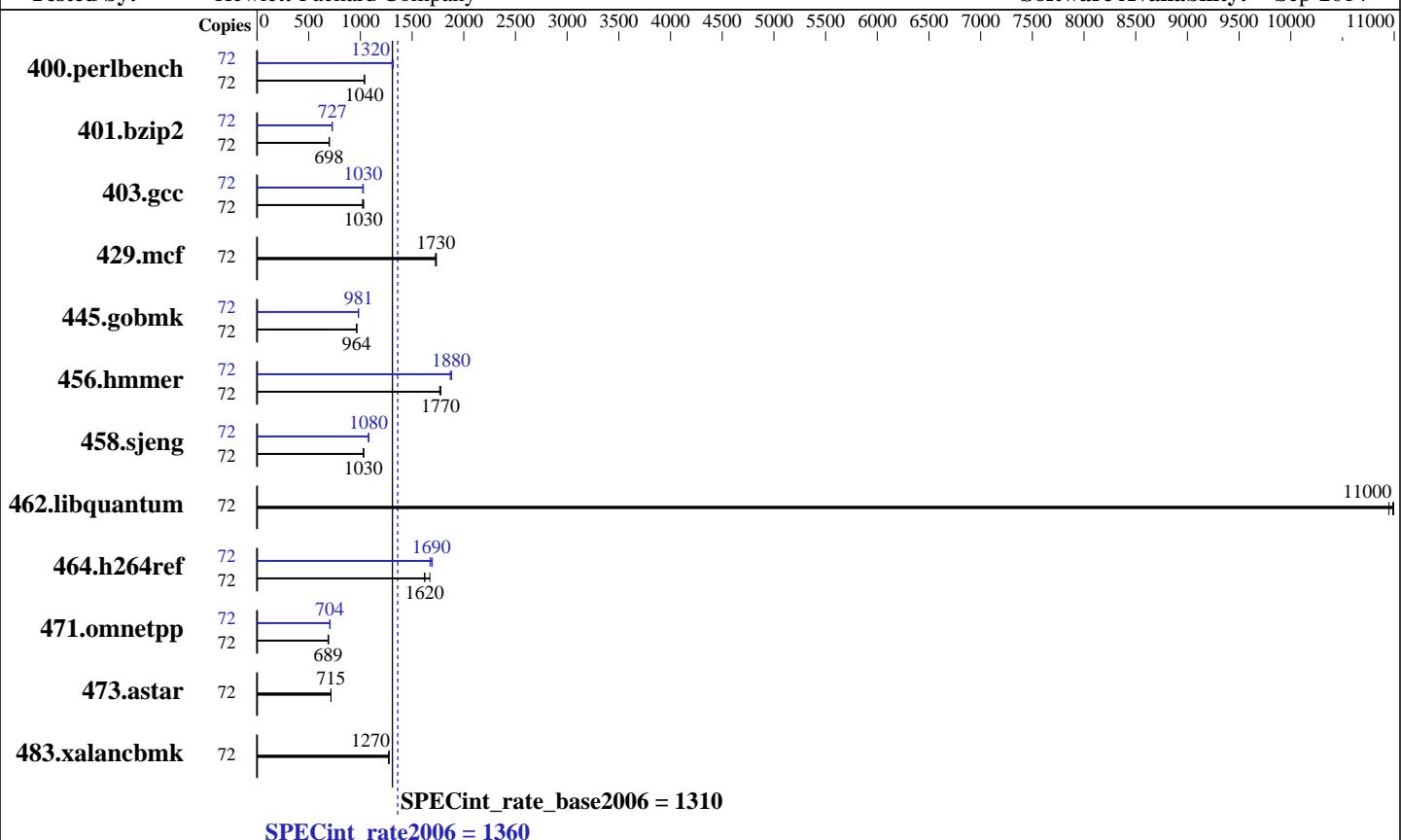
CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Mar-2015

Hardware Availability: Mar-2015

Software Availability: Sep-2014

SPECint_rate_base2006 = 1310

SPECint_rate2006 = 1360

Hardware

CPU Name:	Intel Xeon E5-2699 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	36 cores, 2 chips, 18 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 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:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 400 GB SATA SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.0 (Maipo)
	Kernel l3.10.0-123.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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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	72	676	1040	678	1040	**678**	**1040**	72	**535**	**1320**	534	1320	538	1310
401.bzip2	72	994	699	**995**	**698**	995	698	72	**955**	**727**	955	728	958	725
403.gcc	72	562	1030	568	1020	**563**	**1030**	72	**565**	**1030**	567	1020	564	1030
429.mcf	72	**379**	**1730**	378	1740	380	1730	72	**379**	**1730**	378	1740	380	1730
445.gobmk	72	**784**	**964**	784	964	783	964	72	770	981	**770**	**981**	770	981
456.hmmer	72	**379**	**1770**	378	1780	380	1770	72	360	1870	357	1880	**358**	**1880**
458.sjeng	72	844	1030	**847**	**1030**	848	1030	72	806	1080	808	1080	**807**	**1080**
462.libquantum	72	136	11000	**136**	**11000**	136	10900	72	136	11000	**136**	**11000**	136	10900
464.h264ref	72	953	1670	984	1620	**982**	**1620**	72	952	1670	940	1700	**944**	**1690**
471.omnetpp	72	650	692	**653**	**689**	655	687	72	639	704	637	707	**639**	**704**
473.astar	72	**706**	**715**	706	716	707	715	72	**706**	**715**	706	716	707	715
483.xalancbmk	72	389	1280	390	1270	**390**	**1270**	72	389	1280	390	1270	**390**	**1270**

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"
    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>

Platform Notes

    BIOS Configuration:
     HP Power Profile set to Custom
     HP Power Regulator to HP Static High Performance Mode
     Minimum Processor Idle Power Core State set to C6 State
     Minimum Processor Idle Power Package State set to No Package State
     QPI Snoop Configuration set to Cluster On Die
     Thermal Configuration set to Maximum Cooling
     Collaborative Power Control set to Disabled
     Processor Power and Utilization Monitoring set to Disabled
     Memory Double Refresh Rate set to 1x Refresh
    Sysinfo program /cpu2006/config/sysinfo.rev6914

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Platform Notes (Continued)

```
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on R110-xl170-A Fri Mar  6 17:32:52 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

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2699 v3 @ 2.30GHz
      2 "physical id"s (chips)
      72 "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 : 9
      siblings  : 18
      physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
   cache size : 23040 KB

From /proc/meminfo
   MemTotal:       263840148 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
   Linux R110-xl170-A 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 6 16:11

SPEC is set to: /cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda4       xfs   307G  163G  144G  54% /
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
```
Continued on next page

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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 HP U14 01/28/2015
    Memory:
    5x HP 752369-081 16 GB 2 rank 2133 MHz
    11x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz

  (End of data from sysinfo program)
```

General Notes

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

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
```

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
```

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

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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:

>   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: -xCORE-AVX2 -ipo -O3 -no-prec-div

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Peak Optimization Flags (Continued)

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/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

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/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Mar 31 12:10:10 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 31 March 2015.