SPEC® CINT2006 Result

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Hewlett-Packard Company

SPECint®_rate2006 = 1520

ProLiant BL660c Gen8
(2.40 GHz, Intel Xeon E5-4650 v2)

SPECint_rate_base2006 = 1470

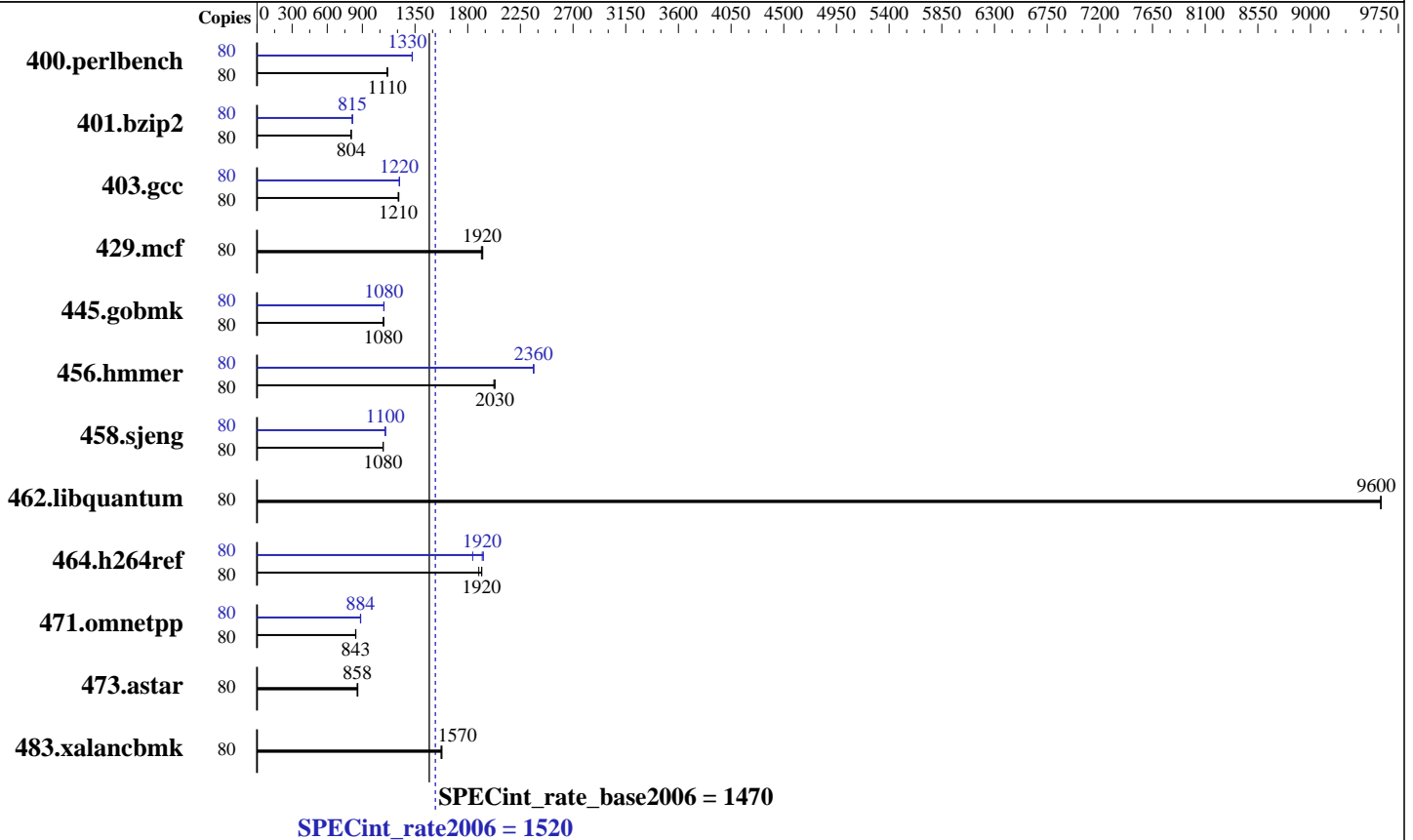|	
CPU2006 license: 3	**Test date:** Dec-2014
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Aug-2014
Tested by: Hewlett-Packard Company	**Software Availability:** Sep-2014

Copies 0 300 600 900 1350 1800 2250 2700 3150 3600 4050 4500 4950 5400 5850 6300 6750 7200 7650 8100 8550 9000 9750

400.perlbench 80 1330 / 80 1110

401.bzip2 80 815 / 80 804

403.gcc 80 1220 / 80 1210

429.mcf 80 1920

445.gobmk 80 1080 / 80 1080

456.hmmer 80 2360 / 80 2030

458.sjeng 80 1100 / 80 1080

462.libquantum 80 9600

464.h264ref 80 1920 / 80 1920

471.omnetpp 80 884 / 80 843

473.astar 80 858

483.xalancbmk 80 1570

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Hardware

CPU Name:	Intel Xeon E5-4650 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	2, 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:	25 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem:	2 x 300 GB 15K SAS, RAID 1
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.0 (Maipo)
	Kernel 3.10.0-123.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	80	**702**	**1110**	702	1110	702	1110	80	**589**	**1330**	589	1330	590	1330
401.bzip2	80	958	806	961	803	**960**	**804**	80	**948**	**815**	949	814	946	816
403.gcc	80	531	1210	534	1210	**533**	**1210**	80	530	1220	529	1220	**529**	**1220**
429.mcf	80	378	1930	**379**	**1920**	381	1920	80	378	1930	**379**	**1920**	381	1920
445.gobmk	80	775	1080	**777**	**1080**	778	1080	80	773	1090	775	1080	**774**	**1080**
456.hmmer	80	**367**	**2030**	367	2030	369	2020	80	**316**	**2360**	316	2360	316	2360
458.sjeng	80	897	1080	**899**	**1080**	899	1080	80	882	1100	**883**	**1100**	885	1090
462.libquantum	80	**173**	**9600**	173	9600	173	9600	80	**173**	**9600**	173	9600	173	9600
464.h264ref	80	934	1890	**922**	**1920**	922	1920	80	916	1930	**920**	**1920**	961	1840
471.omnetpp	80	594	842	**593**	**843**	592	845	80	564	886	566	884	**566**	**884**
473.astar	80	656	856	**655**	**858**	652	861	80	656	856	**655**	**858**	652	861
483.xalancbmk	80	351	1570	**351**	**1570**	349	1580	80	351	1570	**351**	**1570**	349	1580

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 Maximum Performance
   Memory Power Savings Mode set to Maximum Performance
   Collaborative Power Control set to Disabled
   Thermal Configuration set so Maximum Cooling
   Processor Power and Utilization Monitoring set to Disabled
   Memory Refresh Rate set to 1x Refresh

 Sysinfo program /home/cpu/config/sysinfo.rev6914
 $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
 running on pl26.epc.external.hp.com Tue Dec 16 10:11:54 2014

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Platform Notes (Continued)

```
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 E5-4650 v2 @ 2.40GHz
      4 "physical id"s (chips)
      80 "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 : 10
      siblings  : 20
      physical 0: cores 0 1 2 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
      physical 2: cores 0 1 2 3 4 8 9 10 11 12
      physical 3: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 25600 KB

From /proc/meminfo
   MemTotal:        263930196 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 pl26.epc.external.hp.com 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 Dec 16 10:06

SPEC is set to: /home/cpu
   Filesystem                Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rootvg01-lv01 xfs   279G   37G  242G  14% /
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 HP I32 08/03/2014
      Memory:
       32x HP 712382-071 8 GB 2 rank 1866 MHz

     (End of data from sysinfo program)

General Notes

    Environment variables set by runspec before the start of the run:
    LD_LIBRARY_PATH = "/home/cpu/libs/32:/home/cpu/libs/64:/home/cpu/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:
        -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch

C++ benchmarks:
        -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -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: -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

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Peak Optimization Flags (Continued)

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

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/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-revD.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-revD.xml

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