SPEC® CINT2006 Result
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Hewlett-Packard Company

SPECint®_rate2006 =   1260

ProLiant DL380 Gen9
(2.30 GHz, Intel Xeon E5-2698 v3)

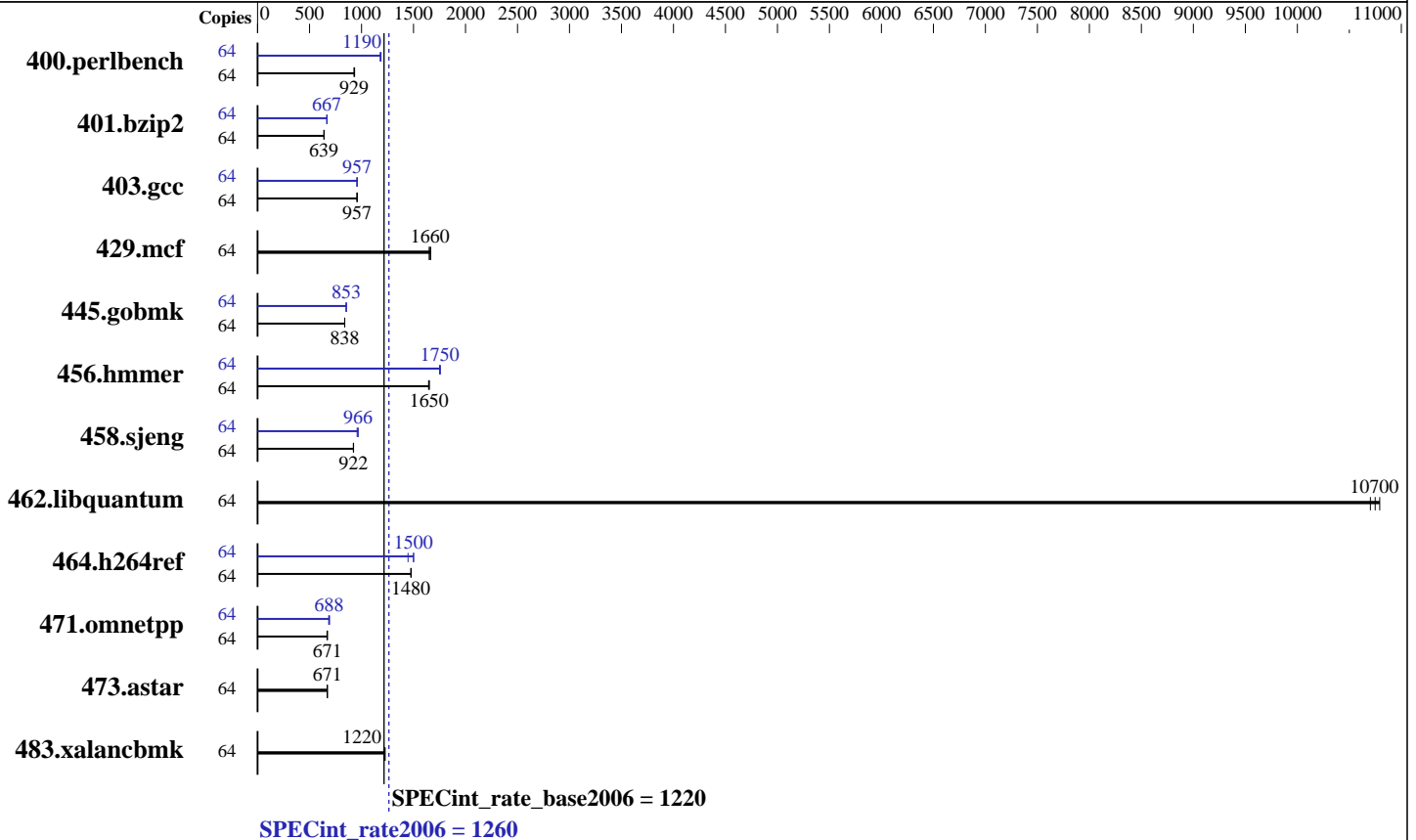SPECint_rate_base2006 = 1220

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Oct-2014

Hardware Availability: Sep-2014

Software Availability: Sep-2014

Benchmark	Copies	Result
400.perlbench	64 / 64	1190 / 929
401.bzip2	64 / 64	667 / 639
403.gcc	64 / 64	957 / 957
429.mcf	64	1660
445.gobmk	64 / 64	853 / 838
456.hmmer	64 / 64	1750 / 1650
458.sjeng	64 / 64	966 / 922
462.libquantum	64	10700
464.h264ref	64 / 64	1500 / 1480
471.omnetpp	64 / 64	688 / 671
473.astar	64	671
483.xalancbmk	64	1220

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Hardware

CPU Name: Intel Xeon E5-2698 v3

CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz

CPU MHz: 2300

FPU: Integrated

CPU(s) enabled: 32 cores, 2 chips, 16 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: 40 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 SAS SSD, RAID 0

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: ext4

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 Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	670	933	**673**	**929**	673	929	64	527	1190	**527**	**1190**	530	1180
401.bzip2	64	967	638	964	641	**967**	**639**	64	**926**	**667**	925	668	926	667
403.gcc	64	**538**	**957**	539	956	537	959	64	537	959	539	955	**538**	**957**
429.mcf	64	354	1650	351	1660	**352**	**1660**	64	354	1650	351	1660	**352**	**1660**
445.gobmk	64	801	839	801	838	**801**	**838**	64	**787**	**853**	788	852	786	854
456.hmmer	64	363	1640	362	1650	**362**	**1650**	64	**340**	**1750**	341	1750	340	1760
458.sjeng	64	**840**	**922**	839	923	840	922	64	801	966	**802**	**966**	809	958
462.libquantum	64	**123**	**10700**	124	10700	123	10800	64	**123**	**10700**	124	10700	123	10800
464.h264ref	64	**960**	**1480**	958	1480	961	1470	64	943	1500	**945**	**1500**	979	1450
471.omnetpp	64	595	672	599	668	**596**	**671**	64	**581**	**688**	584	684	578	692
473.astar	64	669	672	**670**	**671**	671	669	64	669	672	**670**	**671**	671	669
483.xalancbmk	64	360	1230	**362**	**1220**	363	1220	64	360	1230	**362**	**1220**	363	1220

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

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Platform Notes (Continued)

```
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on R110DL380gen9 Tue Oct 28 13:32:57 2014

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 E5-2698 v3 @ 2.30GHz
      2 "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 : 8
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       263840748 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 R110DL380gen9 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 Oct 28 13:19

SPEC is set to: /home/cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda5       ext4  362G  119G  225G  35% /
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
```

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Platform Notes (Continued)

```
    reads system data which is "intended to allow hardware to be accurately
    determined", but the intent may not be met, as there are frequent changes to
    hardware, firmware, and the "DMTF SMBIOS" standard.

    BIOS HP P89 07/11/2014
    Memory:
    16x HP 752369-081 16 GB 2 rank 2133 MHz
    8x UNKNOWN NOT AVAILABLE

  (End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 256 GB and the dmidecode description should have one line reading as:
 16x HP 752369-081 16 GB 2 rank 2133 MHz
```

General Notes

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