SPEC® CINT2006 Result
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Hewlett-Packard Company

ProLiant DL380 Gen9
(2.60 GHz, Intel Xeon E5-2690 v3)

$SPECint®2006 =$ 64.4

$SPECint\_base2006 =$ 61.5
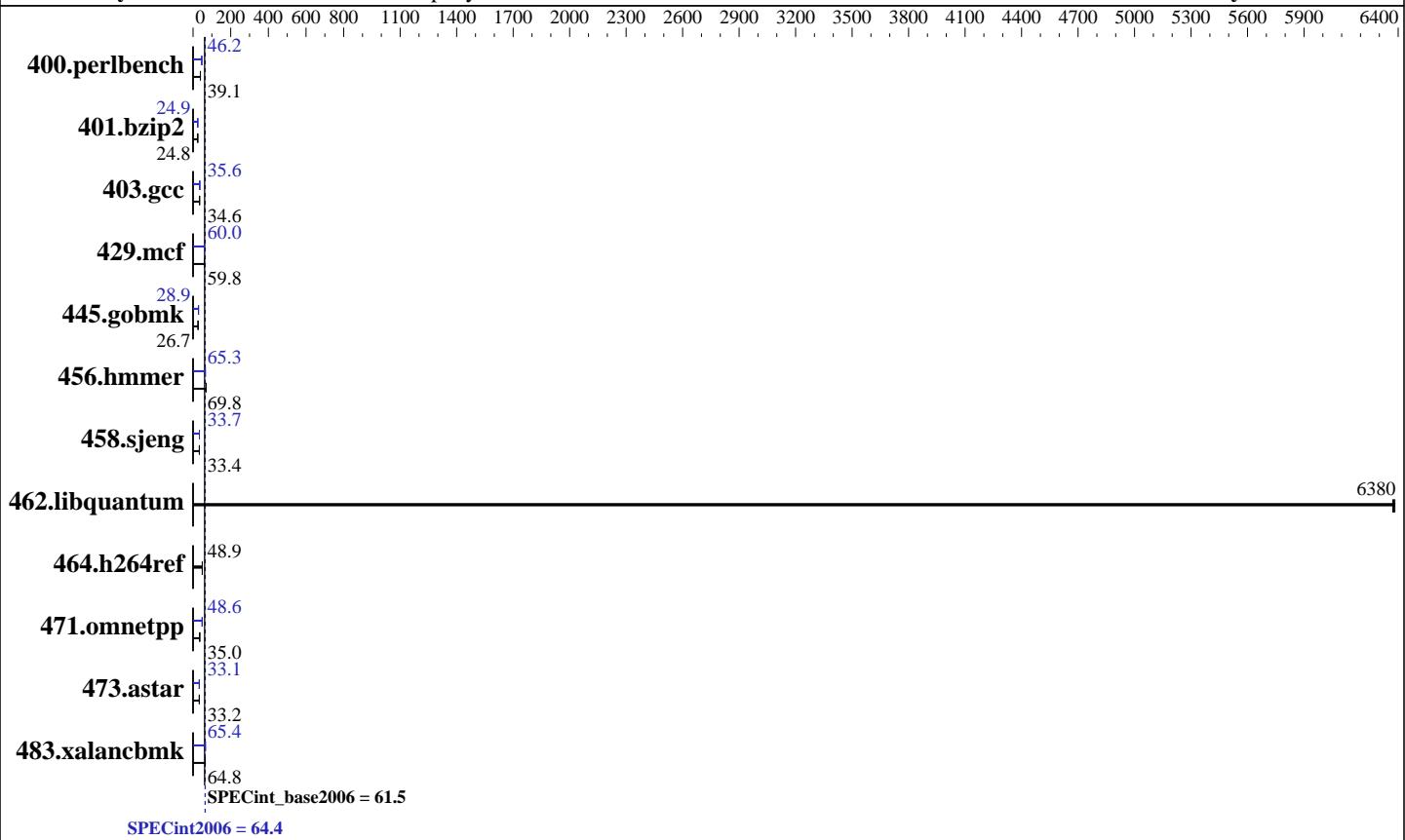
CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Oct-2014
Hardware Availability: Sep-2014
Software Availability: Jun-2014

Benchmark	Value
400.perlbench	46.2 / 39.1
401.bzip2	24.9 / 24.8
403.gcc	35.6 / 34.6
429.mcf	60.0 / 59.8
445.gobmk	28.9 / 26.7
456.hmmer	65.3 / 69.8
458.sjeng	33.7 / 33.4
462.libquantum	6380
464.h264ref	48.9
471.omnetpp	48.6 / 35.0
473.astar	33.1 / 33.2
483.xalancbmk	65.4 / 64.8

SPECint_base2006 = 61.5
SPECint2006 = 64.4

Hardware

CPU Name:	Intel Xeon E5-2690 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 cores/chip
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:	30 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 3.10.0-121.el7.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.0

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	252	38.7	**250**	**39.1**	250	39.1	**211**	**46.2**	211	46.3	212	46.1
401.bzip2	391	24.7	**390**	**24.8**	389	24.8	**387**	**24.9**	387	24.9	387	25.0
403.gcc	232	34.6	**233**	**34.6**	233	34.5	**226**	**35.6**	227	35.5	226	35.6
429.mcf	153	59.6	152	59.9	**152**	**59.8**	152	60.0	152	60.1	**152**	**60.0**
445.gobmk	393	26.7	**393**	**26.7**	393	26.7	**363**	**28.9**	362	28.9	363	28.9
456.hmmer	135	69.0	**134**	**69.8**	133	70.1	143	65.3	143	65.1	**143**	**65.3**
458.sjeng	362	33.4	362	33.4	**362**	**33.4**	**359**	**33.7**	359	33.7	359	33.7
462.libquantum	3.25	6380	3.25	6370	**3.25**	**6380**	3.25	6380	3.25	6370	**3.25**	**6380**
464.h264ref	451	49.0	**452**	**48.9**	452	48.9	451	49.0	**452**	**48.9**	452	48.9
471.omnetpp	**179**	**35.0**	179	34.9	175	35.8	**129**	**48.6**	128	49.0	131	47.8
473.astar	**212**	**33.2**	212	33.1	211	33.2	**212**	**33.1**	212	33.1	213	33.0
483.xalancbmk	**106**	**64.8**	106	64.8	107	64.8	105	65.6	106	65.3	**106**	**65.4**

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

Submit Notes

The config file option 'submit' was used.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled

Platform Notes

BIOS Configuration:
 Intel Hyperthreading Options set to Disabled
 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 Early Snoop
 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.rev6818
 $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
 running on DL380-Gen9 Thu Oct 2 11:39:31 2014

 This section contains SUT (System Under Test) info as seen by

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Platform Notes (Continued)

```
  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 E5-2690 v3 @ 2.60GHz
        2 "physical id"s (chips)
        24 "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 : 12
        siblings  : 12
        physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
        physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
     cache size : 30720 KB

  From /proc/meminfo
     MemTotal:       263845844 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 DL380-Gen9 3.10.0-121.el7.x86_64 #1 SMP Tue Apr 8 10:48:19 EDT 2014
     x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Oct 2 11:35

  SPEC is set to: /cpu2006
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/sda4      ext4  362G   98G  246G  29% /

  Additional information from dmidecode:
    BIOS HP P89 07/11/2014
    Memory:
     2x HP 752369-081 16 GB 2133 MHz 2 rank
     14x HP NOT AVAILABLE 16 GB 2133 MHz 2 rank
     8x UNKNOWN NOT AVAILABLE
```

Continued on next page

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Platform Notes (Continued)

```
  (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 two lines reading as:
  2x HP 752369-081 16 GB 2133 MHz 2 rank
    14x HP NOT AVAILABLE 16 GB 2133 MHz 2 rank
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 KMP_AFFINITY = "granularity=fine,scatter"
 LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"
 OMP_NUM_THREADS = "24"

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
  memory using RedHat EL 6.4
```

Base Compiler Invocation

C benchmarks:
```
    icc  -m64
```

C++ benchmarks:
```
    icpc -m64
```

Base Portability Flags

```
    400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
       401.bzip2: -DSPEC_CPU_LP64
        403.gcc: -DSPEC_CPU_LP64
        429.mcf: -DSPEC_CPU_LP64
     445.gobmk: -DSPEC_CPU_LP64
     456.hmmer: -DSPEC_CPU_LP64
      458.sjeng: -DSPEC_CPU_LP64
   462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
    464.h264ref: -DSPEC_CPU_LP64
     471.omnetpp: -DSPEC_CPU_LP64
       473.astar: -DSPEC_CPU_LP64
   483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
```

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Base Optimization Flags (Continued)

C++ benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh -lsmartheap64
```

Base Other Flags

C benchmarks:

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

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc  -m64
```

```
400.perlbench: icc -m32
```

```
445.gobmk: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc -m32
```

```
473.astar: icpc -m64
```

Peak Portability Flags

```
    400.perlbench: -DSPEC_CPU_LINUX_IA32
        401.bzip2: -DSPEC_CPU_LP64
          403.gcc: -DSPEC_CPU_LP64
          429.mcf: -DSPEC_CPU_LP64
       456.hmmer: -DSPEC_CPU_LP64
        458.sjeng: -DSPEC_CPU_LP64
    462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
      464.h264ref: -DSPEC_CPU_LP64
        473.astar: -DSPEC_CPU_LP64
    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)
               -opt-prefetch -ansi-alias

   401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
              -O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
              -opt-prefetch -ansi-alias

     403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
              -opt-malloc-options=3 -auto-ilp32

     429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
              -opt-prefetch -auto-p32

   445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
              -ansi-alias

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

   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

462.libquantum: basepeak = yes

  464.h264ref: basepeak = yes
```

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)
               -opt-ra-region-strategy=block           -ansi-alias
               -Wl,-z,muldefs -L/sh -lsmartheap

    473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
               -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
               -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap
```

Peak Other Flags

C benchmarks:

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

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.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-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml

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