SPEC® CINT2006 Result
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Hewlett-Packard Company

ProLiant ML350e Gen8 v2
(2.40 GHz, Intel Xeon E5-2470 v2)

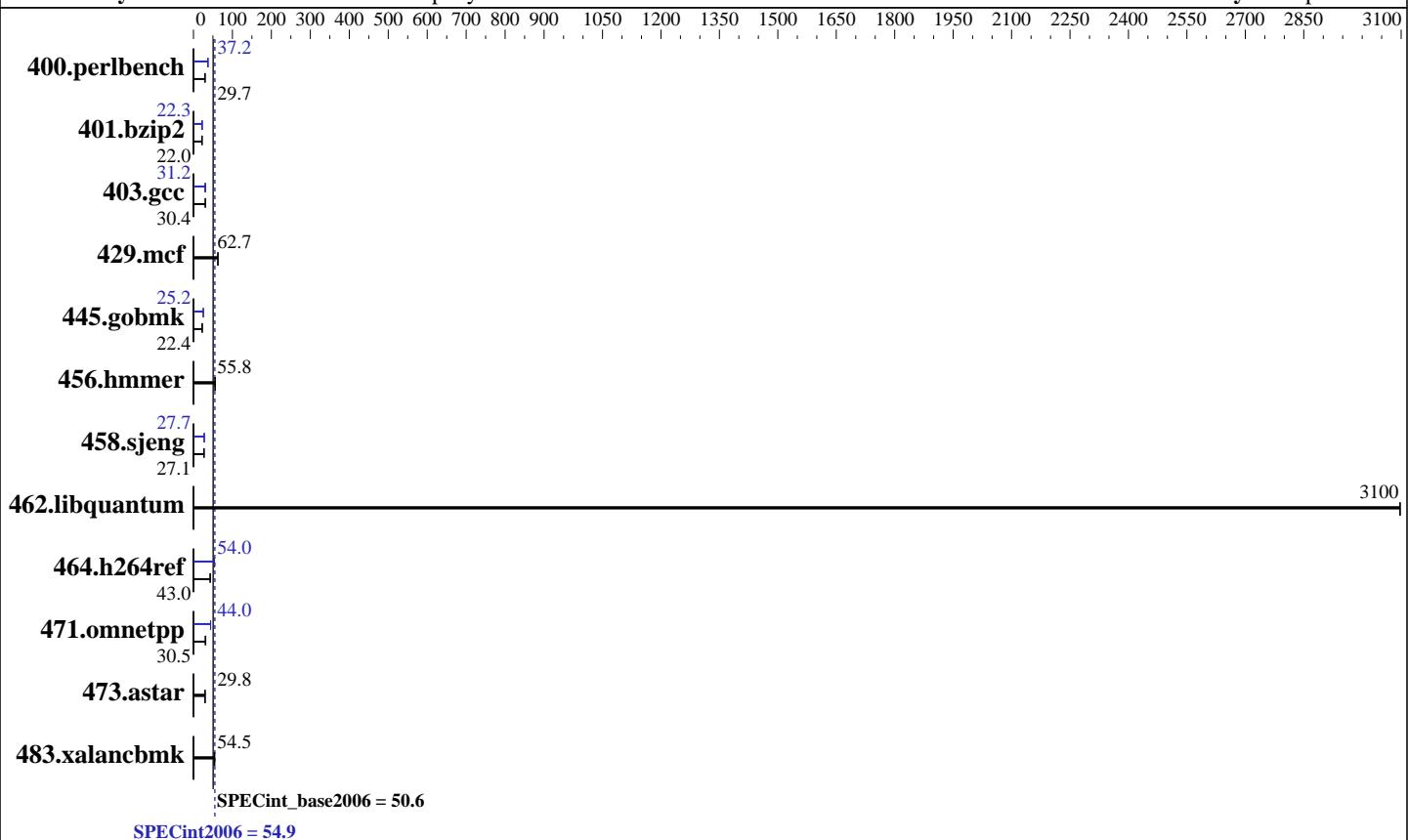SPECint®2006 = 54.9

SPECint_base2006 = 50.6

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Nov-2013

Hardware Availability: Jan-2014

Software Availability: Sep-2013

0 100 200 300 400 500 600 700 800 900 1050 1200 1350 1500 1650 1800 1950 2100 2250 2400 2550 2700 2850 3100

Benchmark	Base	Peak
400.perlbench	29.7	37.2
401.bzip2	22.0	22.3
403.gcc	30.4	31.2
429.mcf	62.7	
445.gobmk	22.4	25.2
456.hmmer	55.8	
458.sjeng	27.1	27.7
462.libquantum	3100	
464.h264ref	43.0	54.0
471.omnetpp	30.5	44.0
473.astar	29.8	
483.xalancbmk	54.5	

SPECint_base2006 = 50.6

SPECint2006 = 54.9

Hardware

CPU Name: Intel Xeon E5-2470 v2

CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz

CPU MHz: 2400

FPU: Integrated

CPU(s) enabled: 20 cores, 2 chips, 10 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: 25 MB I+D on chip per chip

Other Cache: None

Memory: 96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC)

Disk Subsystem: 1 x 1 TB 7.2 K SAS, RAID 0

Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64) SP3 Kernel 3.0.76-0.11-default

Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux

Auto Parallel: Yes

File System: ext3

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	329	29.7	**329**	**29.7**	329	29.7	263	37.2	262	37.2	**263**	**37.2**
401.bzip2	438	22.0	439	22.0	**438**	**22.0**	434	22.3	**434**	**22.3**	433	22.3
403.gcc	265	30.4	**265**	**30.4**	264	30.4	258	31.2	**258**	**31.2**	276	29.2
429.mcf	145	62.7	145	62.7	**145**	**62.7**	145	62.7	145	62.7	**145**	**62.7**
445.gobmk	468	22.4	**468**	**22.4**	469	22.4	415	25.3	416	25.2	**416**	**25.2**
456.hmmer	167	55.9	170	55.0	**167**	**55.8**	167	55.9	170	55.0	**167**	**55.8**
458.sjeng	446	27.1	447	27.1	**446**	**27.1**	437	27.7	**437**	**27.7**	438	27.6
462.libquantum	6.69	3100	**6.69**	**3100**	6.69	3100	6.69	3100	**6.69**	**3100**	6.69	3100
464.h264ref	515	43.0	**515**	**43.0**	516	42.9	410	54.0	**410**	**54.0**	410	54.0
471.omnetpp	**205**	**30.5**	198	31.6	207	30.3	**142**	**44.0**	143	43.8	142	44.2
473.astar	**236**	**29.8**	236	29.8	235	29.8	**236**	**29.8**	236	29.8	235	29.8
483.xalancbmk	127	54.5	130	53.3	**127**	**54.5**	127	54.5	130	53.3	**127**	**54.5**

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

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
Filesystem page cache cleared with:
 echo 1 >        /proc/sys/vm/drop_caches
Disabled unused Linux services through "stop_services.sh" before running.
```

Platform Notes

```
BIOS Configuration:
 Intel Hyperthreading Options set to Disabled
 HP Power Profile set to Maximum Performance
 Minimum Processor Idle Power Core State set to C1E state
 Minimum Processor Idle Power Package State set to Package C6 (retention) State
 Memory Power Savings Mode set to Maximum Performance
 Thermal Configuration set to Maximum Cooling
 Collaborative Power Control set to Disabled
 Dynamic Power Capping Functionality set to Disabled
 Processor Power and Utilization Monitoring set to Disabled
 Memory Refresh Rate set to 1x

 Sysinfo program /cpu2006/config/sysinfo.rev6818
 $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
 running on ML350egen8v2 Thu Nov 21 18:05:30 2013

 This section contains SUT (System Under Test) info as seen by
 some common utilities.  To remove or add to this section, see:
```

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Platform Notes (Continued)

```
    http://www.spec.org/cpu2006/Docs/config.html#sysinfo

  From /proc/cpuinfo
     model name : Intel(R) Xeon(R) CPU E5-2470 v2 @ 2.40GHz
        2 "physical id"s (chips)
        20 "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  : 10
        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
     cache size : 25600 KB

  From /proc/meminfo
     MemTotal:       98903452 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     SUSE Linux Enterprise Server 11 (x86_64)

  From /etc/*release* /etc/*version*
     SuSE-release:
        SUSE Linux Enterprise Server 11 (x86_64)
        VERSION = 11
        PATCHLEVEL = 3

  uname -a:
     Linux ML350egen8v2 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013
     (ccab990) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Nov 21 18:03 last=S

  SPEC is set to: /cpu2006
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda3       ext3  915G   14G  855G   2% /

  Additional information from dmidecode:
    BIOS HP J02 01/20/2014
    Memory:
    12x HP 689911-071 8 GB 1600 MHz

  (End of data from sysinfo program)
```

General Notes

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

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General Notes (Continued)

```
OMP_NUM_THREADS = "20"

 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:
    `-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32`

C++ benchmarks:
    `-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32`
    `-Wl,-z,muldefs -L/sh -lsmartheap64`

Base Other Flags

C benchmarks:

        `403.gcc: -Dalloca=_alloca`

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Peak Compiler Invocation

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

    400.perlbench: `icc -m32`

    445.gobmk: `icc -m32`

    464.h264ref: `icc -m32`

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

    471.omnetpp: `icpc -m32`

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`
       473.astar: `-DSPEC_CPU_LP64`
    483.xalancbmk: `-DSPEC_CPU_LP64 -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)`
                `-opt-prefetch -ansi-alias`

    401.bzip2: `-xSSE4.2(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: `-xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc`
          `-opt-malloc-options=3 -auto-ilp32`

    429.mcf: basepeak = yes

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

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Peak Optimization Flags (Continued)

456.hmmer: basepeak = yes

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

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)
-opt-ra-region-strategy=block   -ansi-alias
-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/HP-Platform-Flags-Intel-V1.2-revB.html
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.xml
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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