SPEC® CFP2006 Result
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Hewlett-Packard Company

$SPECfp^{®}2006 =$ 110

ProLiant DL580 Gen8
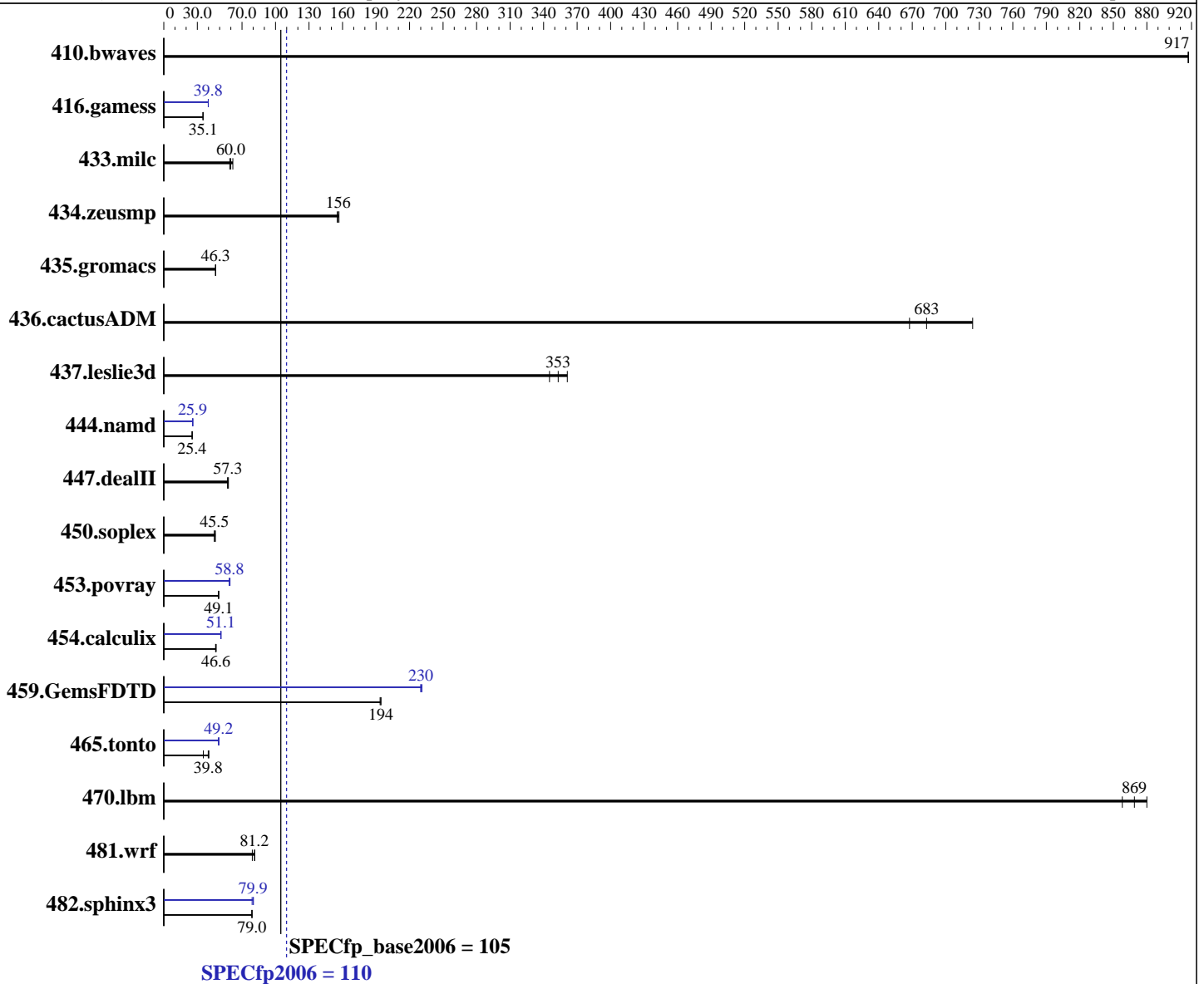(3.40 GHz, Intel Xeon E7-8893 v2)

$SPECfp\_base2006 =$ 105

CPU2006 license: 3	**Test date:** Apr-2014
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Feb-2014
Tested by: Hewlett-Packard Company	**Software Availability:** Sep-2013

0 30.0 70.0 100 130 160 190 220 250 280 310 340 370 400 430 460 490 520 550 580 610 640 670 700 730 760 790 820 850 880 920

Benchmark	Result
410.bwaves	917
416.gamess	39.8 / 35.1
433.milc	60.0
434.zeusmp	156
435.gromacs	46.3
436.cactusADM	683
437.leslie3d	353
444.namd	25.9 / 25.4
447.dealII	57.3
450.soplex	45.5
453.povray	58.8 / 49.1
454.calculix	51.1 / 46.6
459.GemsFDTD	230 / 194
465.tonto	49.2 / 39.8
470.lbm	869
481.wrf	81.2
482.sphinx3	79.9 / 79.0

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Hardware

CPU Name:	Intel Xeon E7-8893 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	3400
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 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

Continued on next page

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; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext3
System State:	Run level 3 (multi-user)

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L3 Cache:	37.5 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	1 TB (64 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1333 MHz and CL9)	Other Software:	None
Disk Subsystem:	1 x 400 GB SSD SAS, RAID 0		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	14.8	917	**14.8**	**917**	14.8	917	14.8	917	**14.8**	**917**	14.8	917
416.gamess	559	35.0	**558**	**35.1**	556	35.2	491	39.9	492	39.8	**492**	**39.8**
433.milc	**153**	**60.0**	149	61.8	155	59.1	**153**	**60.0**	149	61.8	155	59.1
434.zeusmp	58.6	155	**58.2**	**156**	58.0	157	58.6	155	**58.2**	**156**	58.0	157
435.gromacs	154	46.3	**154**	**46.3**	154	46.5	154	46.3	**154**	**46.3**	154	46.5
436.cactusADM	**17.5**	**683**	17.9	668	16.5	724	**17.5**	**683**	17.9	668	16.5	724
437.leslie3d	**26.6**	**353**	27.2	345	26.0	361	**26.6**	**353**	27.2	345	26.0	361
444.namd	316	25.4	**316**	**25.4**	316	25.4	**310**	**25.9**	310	25.9	309	25.9
447.dealII	**200**	**57.3**	198	57.9	200	57.1	**200**	**57.3**	198	57.9	200	57.1
450.soplex	184	45.3	**183**	**45.5**	181	46.2	184	45.3	**183**	**45.5**	181	46.2
453.povray	108	49.2	**108**	**49.1**	109	48.8	90.9	58.6	**90.4**	**58.8**	89.7	59.3
454.calculix	176	46.9	178	46.4	**177**	**46.6**	162	51.1	161	51.2	**161**	**51.1**
459.GemsFDTD	**54.6**	**194**	54.6	194	54.8	194	45.9	231	46.1	230	**46.1**	**230**
465.tonto	244	40.4	**248**	**39.8**	278	35.4	201	48.9	**200**	**49.2**	199	49.3
470.lbm	16.0	858	15.6	880	**15.8**	**869**	16.0	858	15.6	880	**15.8**	**869**
481.wrf	137	81.4	141	79.2	**138**	**81.2**	137	81.4	141	79.2	**138**	**81.2**
482.sphinx3	247	79.0	**247**	**79.0**	247	78.8	247	79.0	243	80.3	**244**	**79.9**

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
runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
Disabled unused Linux services through "stop_services.sh" before running.
```

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CPU2006 license: 3
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Test date: Apr-2014
Hardware Availability: Feb-2014
Software Availability: Sep-2013

Platform Notes

```
BIOS Configuration:
 HP Power Profile set to Maximum Performance
 Minimum Processor Idle Power Core State set to C6 State to Enabled
 Minimum Processor Idle Power Packages State set to Package C6 (non-retention) State
 Collaborative Power Control set to Disabled
 Thermal Configuration set to Maximum Cooling
 Processor Power and Utilization Monitoring set to Disabled
 Memory Refresh Rate set to Disabled

Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on DL580-Gen8-sr Wed Apr  9 21:25:22 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 E7-8893 v2 @ 3.40GHz
      4 "physical id"s (chips)
      48 "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 : 6
      siblings  : 12
      physical 0: cores 3 4 5 6 10 11
      physical 1: cores 3 4 5 6 10 11
      physical 2: cores 3 4 5 6 10 11
      physical 3: cores 3 4 5 6 10 11
   cache size : 38400 KB

From /proc/meminfo
   MemTotal:       1058855444 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 DL580-Gen8-sr 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 Apr 9 16:07 last=S
```

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Platform Notes (Continued)

```
SPEC is set to: /cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda3       ext3  365G   14G  333G   5% /

Additional information from dmidecode:
  BIOS HP P79 02/21/2014
  Memory:
   64x HP 712383-081 16 GB 1333 MHz
   32x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 1 TB and the dmidecode description should have one line reading as:
   64x HP 712383-081 16 GB 1333 MHz
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
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
```

Fortran benchmarks:
```
    ifort -m64
```

Benchmarks using both Fortran and C:
```
    icc   -m64 ifort -m64
```

Base Portability Flags

```
     410.bwaves: -DSPEC_CPU_LP64
    416.gamess: -DSPEC_CPU_LP64
       433.milc: -DSPEC_CPU_LP64
    434.zeusmp: -DSPEC_CPU_LP64
```

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Base Portability Flags (Continued)

```
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
```

Peak Compiler Invocation

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

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

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

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Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

    433.milc: basepeak = yes

    470.lbm: basepeak = yes

    482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
            -parallel

C++ benchmarks:

    444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
            -auto-ilp32

    447.dealII: basepeak = yes

    450.soplex: basepeak = yes

    453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

    410.bwaves: basepeak = yes

    416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
            -inline-level=0 -scalar-rep-

    434.zeusmp: basepeak = yes

    437.leslie3d: basepeak = yes

  459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
            -inline-level=0 -opt-prefetch -parallel

    465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
            -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

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-revD.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-revD.xml

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