SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant XL220a Gen8 v2
(3.60 GHz, Intel Xeon E3-1280 v3)

$SPECfp®\_rate2006 = \quad 154$

$SPECfp\_rate\_base2006 = \quad 149$

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: May-2014
Hardware Availability: Jun-2014
Software Availability: Sep-2013

SPECfp_rate_base2006 = 149

SPECfp_rate2006 = 154

Hardware

CPU Name: Intel Xeon E3-1280 v3
CPU Characteristics: Intel Turbo Boost Technology up to 4.00 GHz
CPU MHz: 3600
FPU: Integrated
CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1 chip
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: No
File System: ext3
System State: Run level 3 (multi-user)
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http://www.spec.org/

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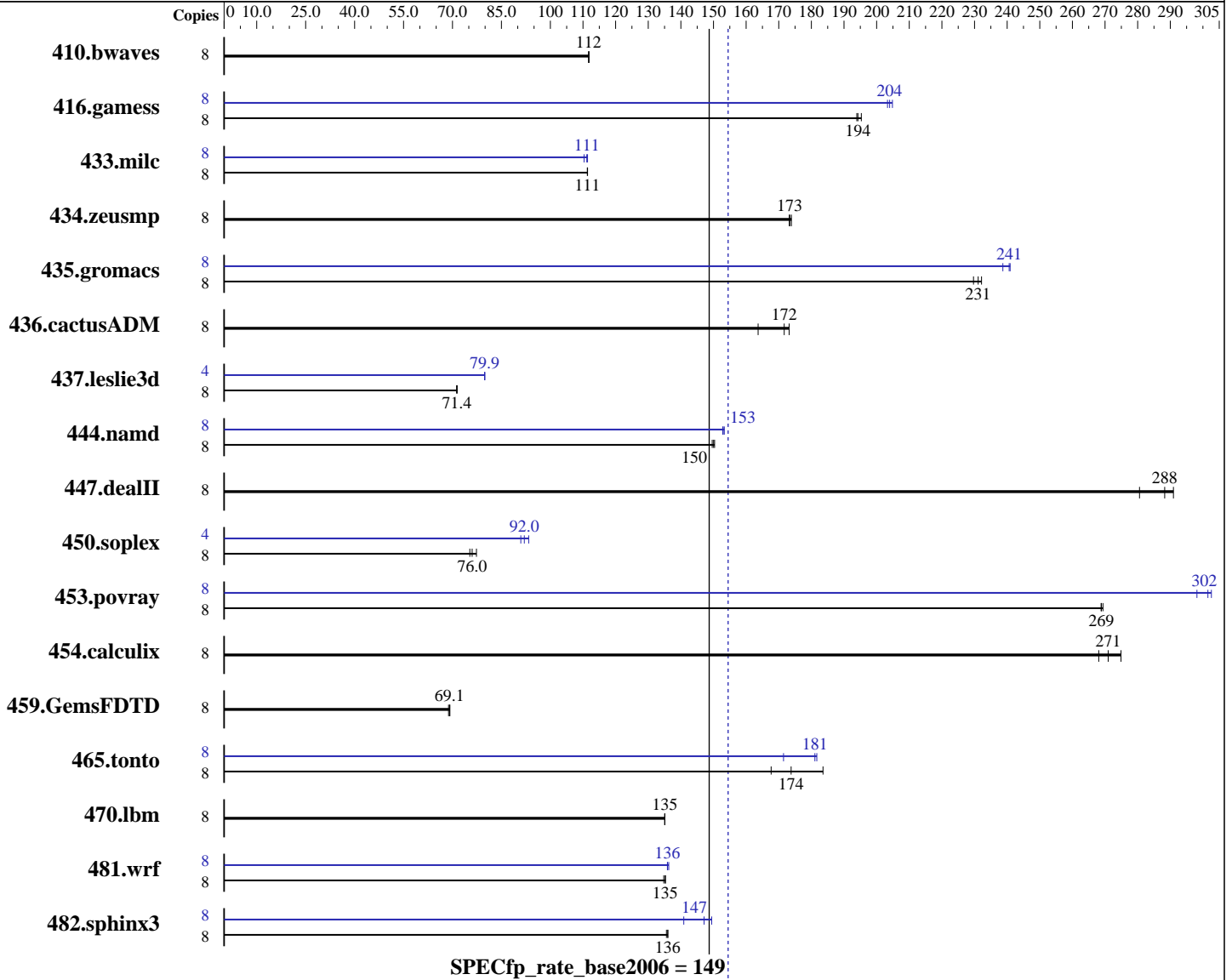|	
CPU2006 license: 3	**Test date:** May-2014
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L3 Cache:	8 MB I+D on chip per chip	Base Pointers:	32/64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	16 GB (4 x 4 GB 2Rx8 PC3-12800E-11, ECC)	Other Software:	None
Disk Subsystem:	1 x 300 GB 15 K SAS, RAID 0		
Other Hardware:	None		

Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	973	112	**_973_**	**_112_**	972	112	8	973	112	**_973_**	**_112_**	972	112
416.gamess	8	802	195	**_806_**	**_194_**	808	194	8	**_768_**	**_204_**	770	203	765	205
433.milc	8	660	111	659	111	**_660_**	**_111_**	8	659	111	**_661_**	**_111_**	666	110
434.zeusmp	8	**_420_**	**_173_**	420	173	419	174	8	**_420_**	**_173_**	420	173	419	174
435.gromacs	8	246	232	249	230	**_247_**	**_231_**	8	**_237_**	**_241_**	239	239	237	241
436.cactusADM	8	552	173	**_557_**	**_172_**	584	164	8	552	173	**_557_**	**_172_**	584	164
437.leslie3d	8	**_1054_**	**_71.4_**	1053	71.4	1055	71.3	4	471	79.9	**_471_**	**_79.9_**	471	79.8
444.namd	8	427	150	429	150	**_428_**	**_150_**	8	**_419_**	**_153_**	420	153	418	153
447.dealII	8	**_317_**	**_288_**	326	281	315	291	8	**_317_**	**_288_**	326	281	315	291
450.soplex	8	**_878_**	**_76.0_**	863	77.3	886	75.3	4	357	93.4	**_363_**	**_92.0_**	367	90.9
453.povray	8	158	269	**_158_**	**_269_**	158	269	8	143	298	141	303	**_141_**	**_302_**
454.calculix	8	240	275	**_244_**	**_271_**	246	268	8	240	275	**_244_**	**_271_**	246	268
459.GemsFDTD	8	1234	68.8	1226	69.2	**_1229_**	**_69.1_**	8	1234	68.8	1226	69.2	**_1229_**	**_69.1_**
465.tonto	8	429	184	470	168	**_453_**	**_174_**	8	459	171	433	182	**_435_**	**_181_**
470.lbm	8	814	135	814	135	**_814_**	**_135_**	8	814	135	814	135	**_814_**	**_135_**
481.wrf	8	661	135	**_661_**	**_135_**	663	135	8	**_657_**	**_136_**	658	136	656	136
482.sphinx3	8	1146	136	**_1147_**	**_136_**	1150	136	8	1107	141	1043	149	**_1060_**	**_147_**

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

Submit Notes

    The taskset mechanism was used to bind copies to processors. The config file option 'submit'
    was used to generate taskset 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

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Platform Notes

```
     BIOS Configuration:
     HP Power Profile set to Maximum Performance
     Minimum Processor Idle Power Core State set to C6 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 XL220a-Gen8-v2 Sun May 18 01:08:00 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 E3-1280 v3 @ 3.60GHz
           1 "physical id"s (chips)
           8 "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 : 4
           siblings  : 8
           physical 0: cores 0 1 2 3
        cache size : 8192 KB

     From /proc/meminfo
        MemTotal:       16291732 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 XL220a-Gen8-v2 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 May 17 16:12 last=S

     SPEC is set to: /cpu2006
        Filesystem      Type  Size  Used Avail Use% Mounted on
        /dev/sda3       ext3  271G   26G  244G  10% /
```

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Platform Notes (Continued)

```
  Additional information from dmidecode:
    BIOS HP P94 04/29/2014
    Memory:
    4x HP 669238-071 4 GB 1600 MHz

  (End of data from sysinfo program)
```

General Notes

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

  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
   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
```

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Base Portability Flags (Continued)

```
    481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Peak Compiler Invocation

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

```
    482.sphinx3: icc -m32
```

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

```
     450.soplex: icpc -m32
```

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

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

Peak Portability Flags

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

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SPECfp_rate2006 =   154

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Peak Portability Flags (Continued)

```
  434.zeusmp: -DSPEC_CPU_LP64
  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
   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
```

Peak Optimization Flags

C benchmarks:

```
    433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
              -O3(pass 2) -no-prec-div(pass 2)
              -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
              -auto-ilp32

     470.lbm: basepeak = yes

  482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
              -unroll2
```

C++ benchmarks:

```
    444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
              -O3(pass 2) -no-prec-div(pass 2)
              -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
              -auto-ilp32

   447.dealII: basepeak = yes

   450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
              -O3(pass 2) -no-prec-div(pass 2)
              -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
              -opt-malloc-options=3

   453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
              -O3(pass 2) -no-prec-div(pass 2)
              -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4
              -ansi-alias
```

Fortran benchmarks:

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Tested by:	Hewlett-Packard Company	**Software Availability:**	Sep-2013

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -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 -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
      -O3(pass 2) -no-prec-div(pass 2)
      -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
      -opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

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

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

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