SPEC® CFP2006 Result

Lenovo Group Limited

$SPECfp^®\_rate2006 = \quad 113$

SPECfp_rate_base2006 = 110

Lenovo System x3250 M5
(Intel Xeon E3-1230L v3, 1.80 GHz)

Benchmark	Copies	Result
410.bwaves	8	110
416.gamess	8	102
	8	96.8
433.milc	8	109
	8	109
434.zeusmp	8	142
435.gromacs	8	122
	8	118
436.cactusADM	8	148
437.leslie3d	4	78.2
	8	69.6
444.namd	8	83.2
	8	81.6
447.dealII	8	163
450.soplex	4	81.8
	8	73.5
453.povray	8	156
	8	137
454.calculix	8	139
459.GemsFDTD	8	67.1
465.tonto	8	115
	8	110
470.lbm	8	130
481.wrf	8	130
	8	129
482.sphinx3	8	110
	8	115

SPECfp_rate_base2006 = 110

SPECfp_rate2006 = 113

Hardware

CPU Name: Intel Xeon E3-1230L v3
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 1800
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: Red Hat Enterprise Linux Server release 6.5 (Santiago)
2.6.32-431.el6.x86_64
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: ext4

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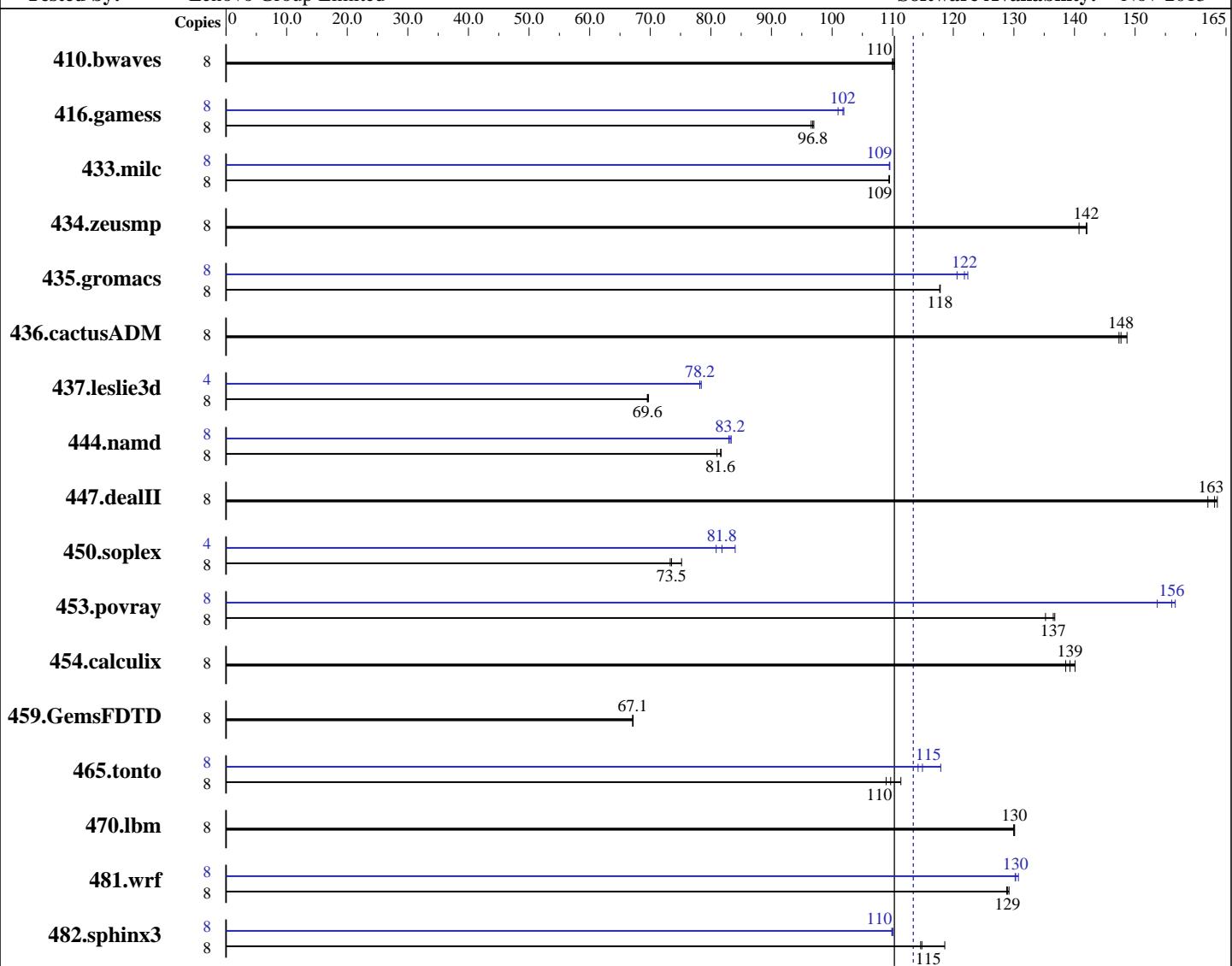|	
CPU2006 license: 9017	**Test date:** Dec-2014
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Jul-2014
Tested by: Lenovo Group Limited	**Software Availability:** Nov-2013

L3 Cache:	8 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	32/64-bit
Memory:	16 GB (4 x 4 GB 2Rx8 PC3-12800U-13)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 1000 GB SATA, 7200 RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	8	**988**	**110**	989	110	986	110	8	**988**	**110**	989	110	986	110
416.gamess	8	1615	97.0	**1618**	**96.8**	1622	96.6	8	**1539**	**102**	1537	102	1551	101
433.milc	8	671	109	671	109	**671**	**109**	8	670	110	671	109	**671**	**109**
434.zeusmp	8	512	142	517	141	**513**	**142**	8	512	142	517	141	**513**	**142**
435.gromacs	8	485	118	**485**	**118**	485	118	8	474	121	**469**	**122**	467	122
436.cactusADM	8	649	147	**647**	**148**	643	149	8	649	147	**647**	**148**	643	149
437.leslie3d	8	1079	69.7	1082	69.5	**1081**	**69.6**	4	481	78.2	479	78.4	**481**	**78.2**
444.namd	8	785	81.7	**786**	**81.6**	792	81.0	8	773	82.9	770	83.4	**771**	**83.2**
447.dealII	8	**561**	**163**	560	164	565	162	8	**561**	**163**	560	164	565	162
450.soplex	8	910	73.3	888	75.2	**908**	**73.5**	4	**408**	**81.8**	397	84.0	413	80.9
453.povray	8	311	137	**312**	**137**	315	135	8	**273**	**156**	272	157	277	154
454.calculix	8	**474**	**139**	471	140	476	139	8	**474**	**139**	471	140	476	139
459.GemsFDTD	8	**1265**	**67.1**	1265	67.1	1264	67.2	8	**1265**	**67.1**	1265	67.1	1264	67.2
465.tonto	8	707	111	723	109	**718**	**110**	8	**685**	**115**	689	114	667	118
470.lbm	8	845	130	**845**	**130**	846	130	8	845	130	**845**	**130**	846	130
481.wrf	8	694	129	**693**	**129**	692	129	8	683	131	686	130	**686**	**130**
482.sphinx3	8	1360	115	1315	119	**1358**	**115**	8	1417	110	**1418**	**110**	1419	110

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"

Platform Notes

    BIOS setting:
    Operating Mode set to Maximum Performance
    Sysinfo program /home/SPEC_ic14/config/sysinfo.rev6818

Lenovo Group Limited

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Tested by: Lenovo Group Limited

Test date: Dec-2014
Hardware Availability: Jul-2014
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Platform Notes (Continued)

```
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Fri Dec 19 14:01:10 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 E3-1230L v3 @ 1.80GHz
      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:       16165980 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux localhost.localdomain 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54
   EST 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 18 22:01

SPEC is set to: /home/SPEC_ic14
   Filesystem                   Type  Size  Used Avail Use% Mounted on
   /dev/mapper/VolGroup-lv_home ext4  860G   23G  794G   3% /home

Additional information from dmidecode:
  BIOS IBM -[JUE115CUS-1.06]- 11/11/2014
  Memory:
   4x Hynix/Hyundai HMT351U7EFR8A-PB 4 GB 1600 MHz 2 rank

(End of data from sysinfo program)
```

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CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Dec-2014

Hardware Availability: Jul-2014

Software Availability: Nov-2013

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/SPEC_ic14/libs/32:/home/SPEC_ic14/libs/64:/home/SPEC_ic14/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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
        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
```
Continued on next page

Lenovo Group Limited

Lenovo System x3250 M5
(Intel Xeon E3-1230L v3, 1.80 GHz)

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CPU2006 license: 9017	**Test date:** Dec-2014
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Tested by: Lenovo Group Limited	**Software Availability:** Nov-2013

Base Optimization Flags (Continued)

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
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
```

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CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Test date: Dec-2014
Hardware Availability: Jul-2014
Software Availability: Nov-2013

Peak Portability Flags (Continued)

```
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:

```
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
```

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$SPECfp\_rate\_base2006 = \quad 110$

CPU2006 license: 9017		**Test date:**	Dec-2014
Test sponsor:	Lenovo Group Limited	**Hardware Availability:**	Jul-2014
Tested by:	Lenovo Group Limited	**Software Availability:**	Nov-2013

Peak Optimization Flags (Continued)

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/IBM-Platform-Flags-V1.2-HSW-A.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/IBM-Platform-Flags-V1.2-HSW-A.xml

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