SPEC® CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

$SPECfp^{®}\_rate2006 = \quad 670$

Lenovo Flex System x240 M5
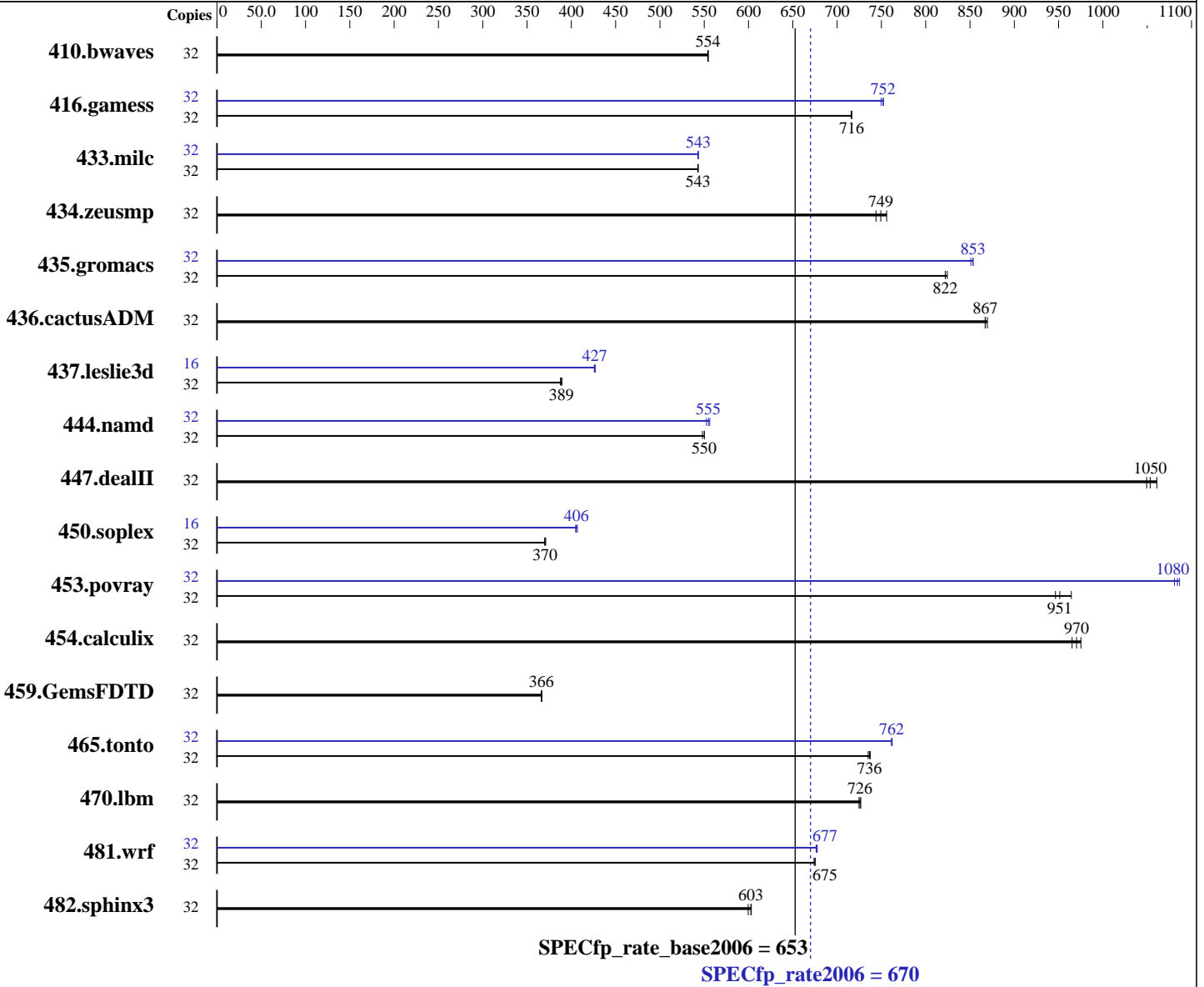(Intel Xeon E5-2667 v3, 3.20 GHz)

$SPECfp\_rate\_base2006 = \quad 653$

CPU2006 license: 9017	**Test date:** Oct-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Dec-2014
Tested by: Lenovo Group Limited	**Software Availability:** Nov-2013

	Copies	
410.bwaves	32	554
416.gamess	32	752
	32	716
433.milc	32	543
	32	543
434.zeusmp	32	749
435.gromacs	32	853
	32	822
436.cactusADM	32	867
437.leslie3d	16	427
	32	389
444.namd	32	555
	32	550
447.dealII	32	1050
450.soplex	16	406
	32	370
453.povray	32	1080
	32	951
454.calculix	32	970
459.GemsFDTD	32	366
465.tonto	32	762
	32	736
470.lbm	32	726
481.wrf	32	677
	32	675
482.sphinx3	32	603

SPECfp_rate_base2006 = 653

SPECfp_rate2006 = 670

Hardware

CPU Name:	Intel Xeon E5-2667 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 2 threads/core
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

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

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2667 v3, 3.20 GHz)

$SPECfp\_rate2006 =$ 670

$SPECfp\_rate\_base2006 =$ 653

CPU2006 license: 9017	**Test date:** Oct-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Dec-2014
Tested by: Lenovo Group Limited	**Software Availability:** Nov-2013

L3 Cache: 20 MB I+D on chip per chip	System State: Run level 3 (multi-user)
Other Cache: None	Base Pointers: 32/64-bit
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)	Peak Pointers: 32/64-bit
Disk Subsystem: 1 x 300 GB SAS, 10000 RPM	Other Software: None
Other Hardware: None	

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	**785**	**554**	784	555	785	554	32	**785**	**554**	784	555	785	554
416.gamess	32	874	717	**875**	**716**	875	716	32	833	752	836	750	**833**	**752**
433.milc	32	541	543	**541**	**543**	541	543	32	**541**	**543**	541	543	541	543
434.zeusmp	32	**389**	**749**	391	744	385	756	32	**389**	**749**	391	744	385	756
435.gromacs	32	277	824	278	822	**278**	**822**	32	**268**	**853**	268	854	269	851
436.cactusADM	32	441	867	**441**	**867**	440	870	32	441	867	**441**	**867**	440	870
437.leslie3d	32	**774**	**389**	772	389	776	388	16	352	427	353	426	**353**	**427**
444.namd	32	466	550	**467**	**550**	468	548	32	**463**	**555**	464	553	461	556
447.dealII	32	345	1060	**348**	**1050**	349	1050	32	345	1060	**348**	**1050**	349	1050
450.soplex	32	**720**	**370**	722	370	719	371	16	328	407	330	405	**329**	**406**
453.povray	32	180	946	**179**	**951**	177	964	32	157	1090	**157**	**1080**	158	1080
454.calculix	32	271	975	**272**	**970**	274	965	32	271	975	**272**	**970**	274	965
459.GemsFDTD	32	927	366	926	367	**927**	**366**	32	927	366	926	367	**927**	**366**
465.tonto	32	**428**	**736**	428	735	427	738	32	**413**	**762**	414	761	413	762
470.lbm	32	605	727	607	725	**606**	**726**	32	605	727	607	725	**606**	**726**
481.wrf	32	530	674	**530**	**675**	529	675	32	**528**	**677**	528	676	528	678
482.sphinx3	32	1040	600	1034	603	**1035**	**603**	32	1040	600	1034	603	**1035**	**603**

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

Submit Notes

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

Operating Mode set to Maximum Performance in BIOS
Enabled COD Preference in BIOS
Disable Early Snoop Preference in BIOS

Continued on next page

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2667 v3, 3.20 GHz)

$SPECfp\_rate2006 =$ 670

$SPECfp\_rate\_base2006 =$ 653

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

Test date: Oct-2015
Hardware Availability: Dec-2014
Software Availability: Nov-2013

Platform Notes (Continued)

```
Sysinfo program /cpu2006.1.2_14.0_jan2014/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on newport-rhel6.5 Fri Oct  9 00:19:09 2015

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 E5-2667 v3 @ 3.20GHz
      2 "physical id"s (chips)
      32 "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 : 8
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       264121860 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 newport-rhel6.5 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 Oct 8 14:43 last=5

SPEC is set to: /cpu2006.1.2_14.0_jan2014
   Filesystem                      Type  Size  Used Avail Use% Mounted on
   /dev/mapper/vg_newportrhel6-lv_root ext4  265G   87G  166G  35% /

Additional information from dmidecode:
  BIOS IBM -[C4E105JUS-1.10]- 04/11/2015
  Memory:
   8x NO DIMM Unknown
   16x Samsung M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank

(End of data from sysinfo program)
```

SPEC CFP2006 Result

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2667 v3, 3.20 GHz)

$SPECfp\_rate2006 =$ 670

$SPECfp\_rate\_base2006 =$ 653

CPU2006 license: 9017	**Test date:**	Oct-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:**	Dec-2014
Tested by: Lenovo Group Limited	**Software Availability:**	Nov-2013

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006.1.2_14.0_jan2014/libs/32:/cpu2006.1.2_14.0_jan2014/libs/64:/cpu2006.1.2_14.0_jan2014/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
 Filesystem page cache cleared with:
 echo 1>   /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>

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

SPEC CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2667 v3, 3.20 GHz)

$SPECfp\_rate2006 =$ 670

$SPECfp\_rate\_base2006 =$ 653

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

Test date: Oct-2015
Hardware Availability: Dec-2014
Software Availability: Nov-2013

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:
```
icc    -m64
```

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
```

Continued on next page

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2667 v3, 3.20 GHz)

$\mathrm{SPECfp\_rate2006} = \quad 670$

$\mathrm{SPECfp\_rate\_base2006} = \quad 653$

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Oct-2015

Hardware Availability: Dec-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
482.sphinx3: -DSPEC_CPU_LP64
```

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: basepeak = yes
```

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
```

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2667 v3, 3.20 GHz)

$SPECfp_rate2006 = $ 670

$SPECfp_rate_base2006 = $ 653

CPU2006 license: 9017		**Test date:**	Oct-2015
Test sponsor:	Lenovo Group Limited	**Hardware Availability:**	Dec-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/Lenovo-Platform-Flags-V1.2-HSW-BB.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/Lenovo-Platform-Flags-V1.2-HSW-BB.xml

SPEC and SPECfp are registered trademarks of the Standard Performance
Evaluation Corporation. All other brand and product names appearing in
this result are trademarks or registered trademarks of their respective
holders.

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

Tested with SPEC CPU2006 v1.2.
Report generated on Tue Nov 3 11:56:14 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 November 2015.