SPEC® CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$SPECfp®\_rate2006 = 568$

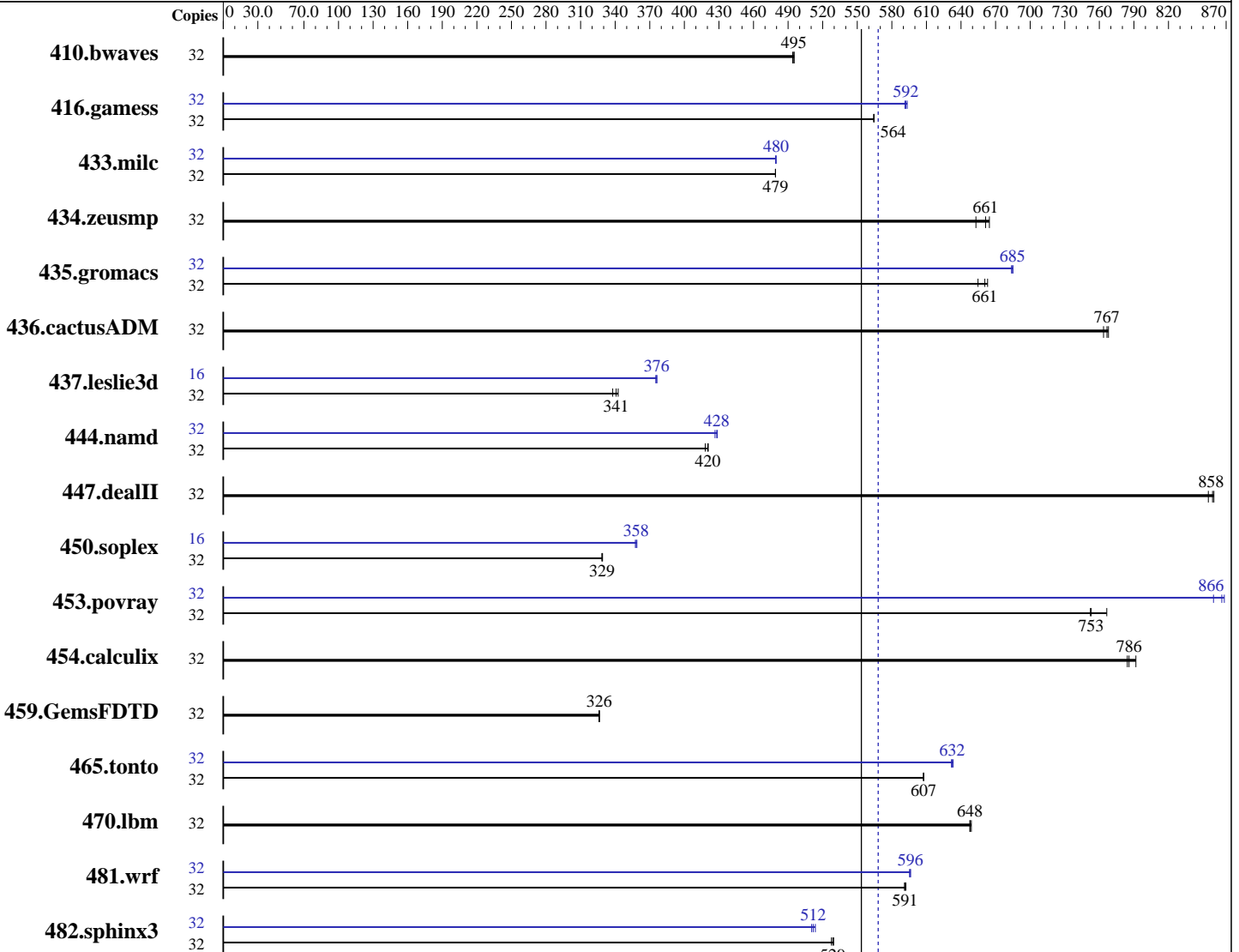$SPECfp\_rate\_base2006 = 554$

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

Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Jan-2014

Copies		
410.bwaves	32	495
416.gamess	32	592
	32	564
433.milc	32	480
	32	479
434.zeusmp	32	661
435.gromacs	32	685
	32	661
436.cactusADM	32	767
437.leslie3d	16	376
	32	341
444.namd	32	428
	32	420
447.dealII	32	858
450.soplex	16	358
	32	329
453.povray	32	866
	32	753
454.calculix	32	786
459.GemsFDTD	32	326
465.tonto	32	632
	32	607
470.lbm	32	648
481.wrf	32	596
	32	591
482.sphinx3	32	512
	32	529

SPECfp_rate_base2006 = 554

SPECfp_rate2006 = 568

Hardware

CPU Name: Intel Xeon E5-2630 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 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

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$\text{SPECfp\_rate2006} = \quad 568$

$\text{SPECfp\_rate\_base2006} = \quad 554$

CPU2006 license: 9017	**Test date:**	Jan-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:**	Sep-2014
Tested by: Lenovo Group Limited	**Software Availability:**	Jan-2014

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, running at 1866 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 800 GB SATA SSD		
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	878	495	**878**	**495**	880	494	32	878	495	**878**	**495**	880	494
416.gamess	32	1110	564	1110	564	**1110**	**564**	32	**1058**	**592**	1056	593	1060	591
433.milc	32	613	479	**613**	**479**	613	479	32	**613**	**480**	613	479	613	480
434.zeusmp	32	**440**	**661**	438	665	446	653	32	**440**	**661**	438	665	446	653
435.gromacs	32	349	655	**346**	**661**	345	663	32	334	684	334	685	**334**	**685**
436.cactusADM	32	**499**	**767**	501	764	498	768	32	**499**	**767**	501	764	498	768
437.leslie3d	32	**883**	**341**	890	338	878	343	16	400	376	401	375	**400**	**376**
444.namd	32	**611**	**420**	614	418	610	421	32	602	427	**599**	**428**	599	429
447.dealII	32	**427**	**858**	428	855	426	859	32	**427**	**858**	428	855	426	859
450.soplex	32	812	329	**812**	**329**	811	329	16	372	359	**373**	**358**	373	358
453.povray	32	222	766	226	752	**226**	**753**	32	**197**	**866**	196	868	198	859
454.calculix	32	337	784	**336**	**786**	333	792	32	337	784	**336**	**786**	333	792
459.GemsFDTD	32	1040	326	**1041**	**326**	1041	326	32	1040	326	**1041**	**326**	1041	326
465.tonto	32	518	607	518	608	**518**	**607**	32	498	632	497	633	**498**	**632**
470.lbm	32	678	649	679	648	**679**	**648**	32	678	649	679	648	**679**	**648**
481.wrf	32	**604**	**591**	604	592	605	591	32	**600**	**596**	600	596	600	595
482.sphinx3	32	1182	528	1178	530	**1179**	**529**	32	**1219**	**512**	1222	510	1214	514

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

   BIOS configuration:
   Cluster On Die set to Auto
   Early Snoop set to Auto

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$SPECfp_rate2006 = $ 568

$SPECfp_rate_base2006 = $ 554

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

Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Jan-2014

Platform Notes (Continued)

```
Performance Profile set to Custom
C1E Support set to Disabled
Core C3 set to Disabled
Core C6 set to Disabled
Thermal Profile set to High Fan Speed
Memory Power Savings set to Disabled
 Sysinfo program /usr/cpu2006/config/sysinfo.rev6818
 $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
 running on RD550 Wed Jan  7 11:12:48 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 E5-2630 v3 @ 2.40GHz
       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:       264413548 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 RD550 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 Jan 6 23:34

 SPEC is set to: /usr/cpu2006
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda2       ext4  730G   68G  626G  10% /

 Additional information from dmidecode:
    BIOS LENOVO PB1TS110 10/06/2014
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

SPECfp_rate2006 =   568

SPECfp_rate_base2006 =   554

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

Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Jan-2014

Platform Notes (Continued)

```
     Memory:
      16x   16 GB
      8x NO DIMM NO DIMM
      16x Samsung M393A2G40DB0-CPB 16 GB 1866 MHz 2 rank

  (End of data from sysinfo program)
 RD550 support 4 channels and 12 DIMMs per processor, total 8 channels and
 24 DIMMs. 16 DIMM slots installed with 16 GB DIMM for this run.
```

General Notes

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

Continued on next page

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$SPECfp\_rate2006 = 568$

$SPECfp\_rate\_base2006 = 554$

CPU2006 license: 9017　　　　　　　　　　　　　　　**Test date:** Jan-2015
Test sponsor: Lenovo Group Limited　　　　　　　**Hardware Availability:** Sep-2014
Tested by: Lenovo Group Limited　　　　　　　**Software Availability:** Jan-2014

Base Portability Flags (Continued)

```
   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
```

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
```

SPEC CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$SPECfp_rate2006 = $ **568**

$SPECfp_rate_base2006 = $ **554**

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

Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Jan-2014

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
    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
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2015 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$SPECfp_rate2006 = $ 568

$SPECfp_rate_base2006 = $ 554

CPU2006 license: 9017	**Test date:** Jan-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Sep-2014
Tested by: Lenovo Group Limited	**Software Availability:** Jan-2014

Peak Optimization Flags (Continued)

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

    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-Settings-V1.2-HSW-revA.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-Settings-V1.2-HSW-revA.xml

Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2630 v3, 2.40 GHz)

$\text{SPECfp\_rate2006} =$ 568

$\text{SPECfp\_rate\_base2006} =$ 554

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 Feb 10 18:33:20 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 10 February 2015.