SPEC® CFP2006 Result

Lenovo Group Limited

$SPECfp^{®}\_rate2006 = 587$

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

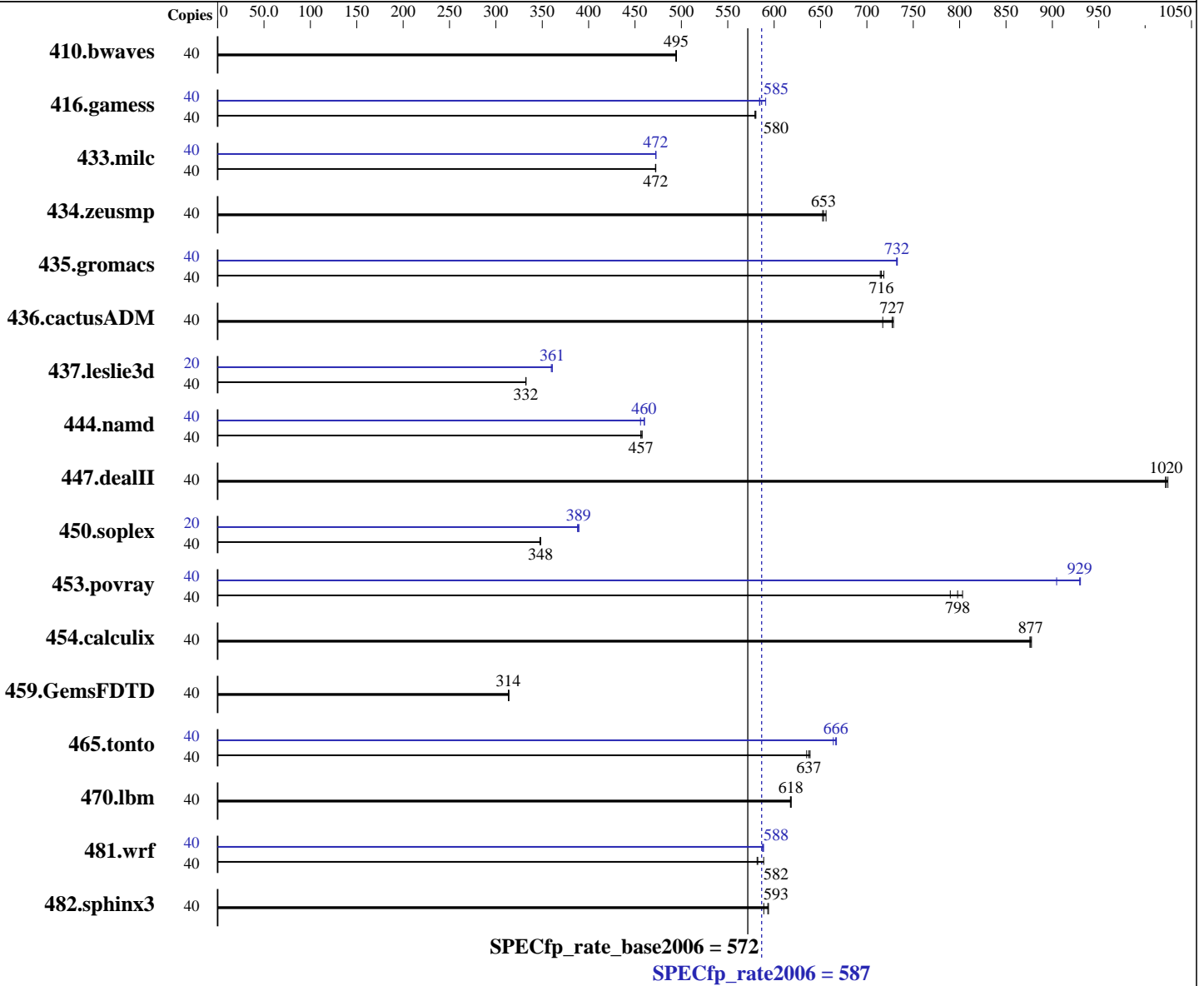$SPECfp\_rate\_base2006 = 572$

	Copies	Result
410.bwaves	40	495
416.gamess	40 / 40	585 / 580
433.milc	40 / 40	472 / 472
434.zeusmp	40	653
435.gromacs	40 / 40	732 / 716
436.cactusADM	40	727
437.leslie3d	20 / 40	361 / 332
444.namd	40 / 40	460 / 457
447.dealII	40	1020
450.soplex	20 / 40	389 / 348
453.povray	40 / 40	929 / 798
454.calculix	40	877
459.GemsFDTD	40	314
465.tonto	40 / 40	666 / 637
470.lbm	40	618
481.wrf	40 / 40	588 / 582
482.sphinx3	40	593

SPECfp_rate_base2006 = 572

SPECfp_rate2006 = 587

Hardware

CPU Name:	Intel Xeon E5-2658 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	20 cores, 2 chips, 10 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 6.4 (Santiago) 2.6.32-358.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 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

SPECfp_rate2006 =   587

SPECfp_rate_base2006 =   572

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

L3 Cache:	25 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 PC3-14900R-13, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 500 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	40	**1099**	**495**	1100	494	1099	495	40	**1099**	**495**	1100	494	1099	495
416.gamess	40	1352	579	**1351**	**580**	1349	580	40	1341	584	1325	591	**1340**	**585**
433.milc	40	**778**	**472**	778	472	777	472	40	**777**	**472**	777	472	777	473
434.zeusmp	40	**557**	**653**	558	652	555	656	40	**557**	**653**	558	652	555	656
435.gromacs	40	**399**	**716**	400	714	398	718	40	**390**	**732**	390	732	390	733
436.cactusADM	40	656	729	**657**	**727**	667	717	40	656	729	**657**	**727**	667	717
437.leslie3d	40	1131	332	1132	332	**1131**	**332**	20	521	361	**521**	**361**	523	360
444.namd	40	701	458	703	456	**703**	**457**	40	704	456	697	460	**698**	**460**
447.dealII	40	**447**	**1020**	447	1020	448	1020	40	**447**	**1020**	447	1020	448	1020
450.soplex	40	**958**	**348**	960	347	958	348	20	**429**	**389**	428	390	430	388
453.povray	40	**267**	**798**	265	803	269	790	40	229	930	235	905	**229**	**929**
454.calculix	40	376	877	**376**	**877**	377	876	40	376	877	**376**	**877**	377	876
459.GemsFDTD	40	**1354**	**314**	1351	314	1354	314	40	**1354**	**314**	1351	314	1354	314
465.tonto	40	616	639	620	635	**618**	**637**	40	590	667	593	664	**591**	**666**
470.lbm	40	889	618	890	618	**889**	**618**	40	889	618	890	618	**889**	**618**
481.wrf	40	**767**	**582**	768	582	759	589	40	760	588	**760**	**588**	759	589
482.sphinx3	40	**1314**	**593**	1313	594	1324	589	40	**1314**	**593**	1313	594	1324	589

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"
    Zone reclaim mode enabled with:
    echo 1 > /proc/sys/vm/zone_reclaim_mode
    Intel Idle Driver disabled with the following Linux kernel parameter in /etc/grub.conf:
    intel_idle.max_cstate=0

Lenovo Group Limited

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

SPECfp_rate2006 =   587

SPECfp_rate_base2006 = 572

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

Test date: Dec-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

Platform Notes

```
BIOS setting:
Operating Mode set to Maximum Performance
Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6874
$Rev: 6874 $ $Date:: 2013-11-20 #$ 654bd3fcf53b06faef0efe54ed011998
running on dx360M4 Sun Dec 14 07:07:47 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 E5-2658 v2 @ 2.40GHz
      2 "physical id"s (chips)
      40 "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 : 10
      siblings  : 20
      physical 0: cores 0 1 2 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 25600 KB

From /proc/meminfo
   MemTotal:       264640496 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux dx360M4 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 13 18:06

SPEC is set to: /home/SPECcpu-20140116-ic14.0
   Filesystem     Type     Size  Used Avail Use% Mounted on
   /dev/mapper/vg_td2-lv_home
                  ext4     380G  174G  187G  49% /home
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
   reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to
   hardware, firmware, and the "DMTF SMBIOS" standard.
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

$SPECfp_rate2006 = $ **587**

$SPECfp_rate_base2006 = $ 572

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

Test date: Dec-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

Platform Notes (Continued)

```
   BIOS IBM -[TDE139OUS-1.50]- 02/21/2014
   Memory:
    16x Samsung M393B2G70QH0-CMA 16 GB 2 rank 1866 MHz, configured at 1867 MHz

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/SPECcpu-20140116-ic14.0/libs/32:/home/SPECcpu-20140116-ic14.0/libs/64:/home/SPECcpu-20140116-ic14.0/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
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

$SPECfp\_rate2006 =$ 587

$SPECfp\_rate\_base2006 =$ 572

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

Test date: Dec-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

Base Portability Flags (Continued)

```
     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 -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

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

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

Benchmarks using both Fortran and C:
```
-xAVX -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
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

$SPECfp_rate2006 = $ 587

$SPECfp_rate_base2006 = $ 572

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

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
  482.sphinx3: -DSPEC_CPU_LP64
```

Peak Optimization Flags

C benchmarks:

```
    433.milc: -xAVX(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: -xAVX(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: -xAVX(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: -xAVX(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:

Lenovo Group Limited

Lenovo System x iDataPlex dx360 M4
(Intel Xeon E5-2658 v2, 2.40 GHz)

$SPECfp_rate2006 = $ 587

$SPECfp_rate_base2006 = $ 572

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

Test date: Dec-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

Peak Optimization Flags (Continued)

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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(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: -xAVX(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: -xAVX -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-IVB-C.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/IBM-Platform-Flags-V1.2-IVB-C.xml

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 Dec 30 16:11:03 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 30 December 2014.