



SPEC® CFP2006 Result

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Lenovo Group Limited

Lenovo ThinkServer RS140 (Intel Xeon E3-1285 v3, 3.60 GHz)

SPECfp®2006 = 77.6

SPECfp_base2006 = 76.3

CPU2006 license: 9017

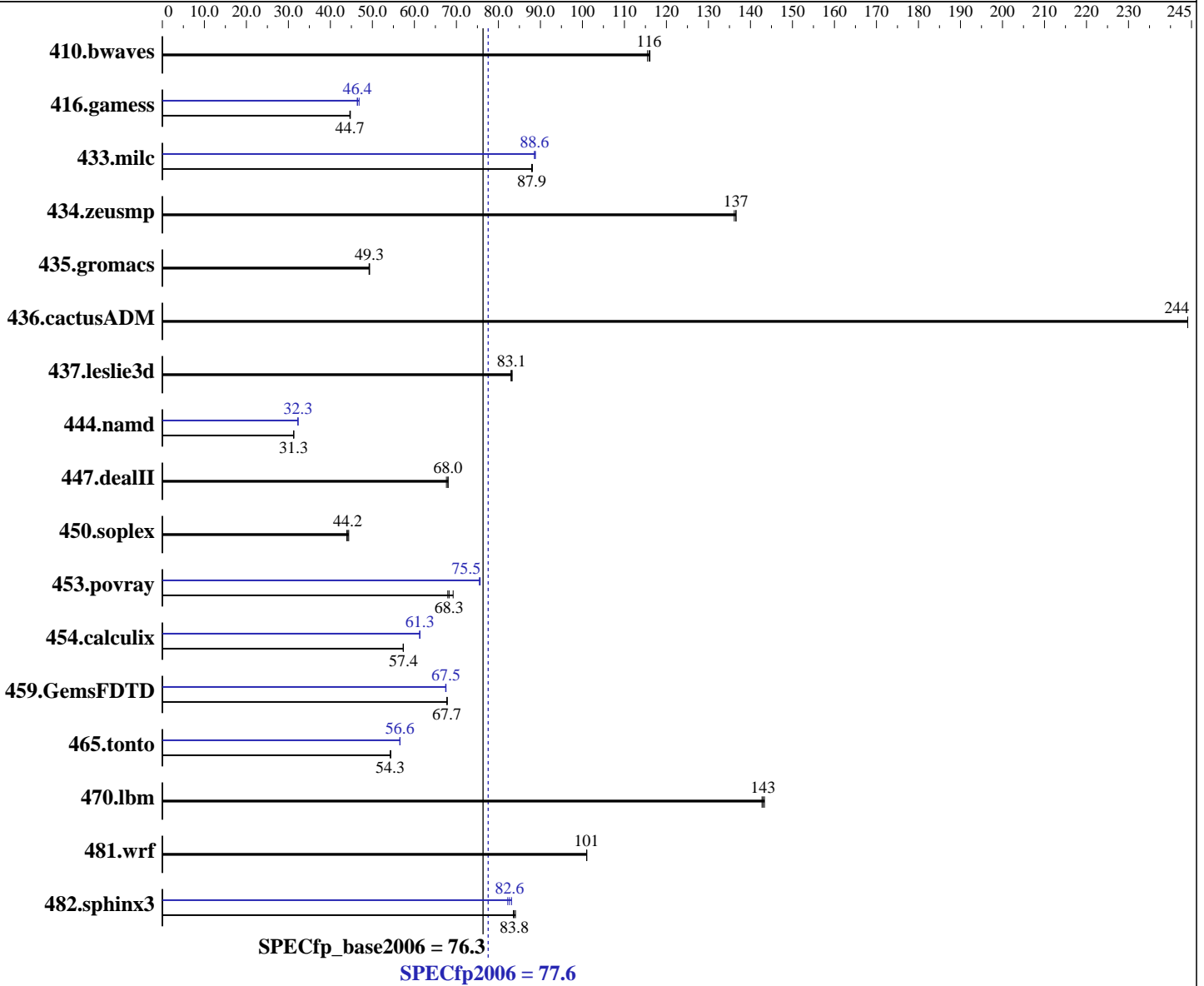
Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Apr-2014

Hardware Availability: Jun-2014

Software Availability: Apr-2014



Hardware

CPU Name: Intel Xeon E3-1285 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

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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: Yes
 File System: ext4

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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (2 x 8 GB 2Rx8 PC3L-12800E-11, ECC)
Disk Subsystem: 1 x 240 GB SATA SSD
Other Hardware: None

System State: Run level 3 (Full multiuser with network)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	117	116	118	115	<u>117</u>	<u>116</u>	117	116	118	115	<u>117</u>	<u>116</u>
416.gamess	439	44.6	437	44.8	<u>438</u>	<u>44.7</u>	422	46.4	418	46.8	<u>422</u>	<u>46.4</u>
433.milc	104	87.9	<u>104</u>	<u>87.9</u>	104	88.1	<u>104</u>	<u>88.6</u>	104	88.6	103	88.8
434.zeusmp	66.6	137	66.8	136	<u>66.6</u>	<u>137</u>	66.6	137	66.8	136	<u>66.6</u>	<u>137</u>
435.gromacs	145	49.2	145	49.3	<u>145</u>	<u>49.3</u>	145	49.2	145	49.3	<u>145</u>	<u>49.3</u>
436.cactusADM	<u>49.0</u>	<u>244</u>	49.0	244	49.0	244	<u>49.0</u>	<u>244</u>	49.0	244	49.0	244
437.leslie3d	113	83.3	113	83.0	<u>113</u>	<u>83.1</u>	113	83.3	113	83.0	<u>113</u>	<u>83.1</u>
444.namd	256	31.3	<u>257</u>	<u>31.3</u>	257	31.3	248	32.3	248	32.3	<u>248</u>	<u>32.3</u>
447.dealII	<u>168</u>	<u>68.0</u>	168	68.0	169	67.6	<u>168</u>	<u>68.0</u>	168	68.0	169	67.6
450.soplex	<u>189</u>	<u>44.2</u>	190	43.9	188	44.4	<u>189</u>	<u>44.2</u>	190	43.9	188	44.4
453.povray	78.3	68.0	76.9	69.2	<u>77.9</u>	<u>68.3</u>	70.3	75.7	<u>70.4</u>	<u>75.5</u>	70.5	75.5
454.calculix	144	57.4	<u>144</u>	<u>57.4</u>	144	57.3	135	61.3	135	61.3	<u>135</u>	<u>61.3</u>
459.GemsFDTD	157	67.7	156	67.8	<u>157</u>	<u>67.7</u>	<u>157</u>	<u>67.5</u>	157	67.5	157	67.4
465.tonto	181	54.3	<u>181</u>	<u>54.3</u>	181	54.4	<u>174</u>	<u>56.6</u>	174	56.6	174	56.5
470.lbm	96.3	143	<u>96.1</u>	<u>143</u>	95.9	143	96.3	143	<u>96.1</u>	<u>143</u>	95.9	143
481.wrf	111	101	<u>111</u>	<u>101</u>	111	101	111	101	<u>111</u>	<u>101</u>	111	101
482.sphinx3	232	84.1	<u>233</u>	<u>83.8</u>	233	83.6	234	83.1	237	82.2	<u>236</u>	<u>82.6</u>

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

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS configuration:
ICE Performance Modes set to Full Speed
Sysinfo program /usr/cpu2006/config/sysinfo.rev6818
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191
running on RS140 Wed Apr 23 06:02:09 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>

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Platform Notes (Continued)

```

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) CPU E3-1285 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:      16219472 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 RS140 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 Apr 23 01:22

SPEC is set to: /usr/cpu2006
  Filesystem      Type  Size  Used Avail Use% Mounted on
  /dev/sda2       ext4  217G   30G  176G  15% /

Additional information from dmidecode:
  BIOS LENOVO FBKT75CUS 03/24/2014
  Memory:
    2x 8 GB
    2x Samsung M391B1G73QH0-YK0 8 GB 1600 MHz 2 rank
    2x [Empty] [Empty]

(End of data from sysinfo program)
RS140 support 2 channels and 2 DIMMs per channel, total 4 DIMMs.
2 DIMM slots installed with 8 GB DIMM for this run.

```

General Notes

Environment variables set by runspec before the start of the run:

```

KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/usr/cpu2006/libs/32:/usr/cpu2006/libs/64:/usr/cpu2006/sh"

```

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General Notes (Continued)

OMP_NUM_THREADS = "4"

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

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.deallI: -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



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Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

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) -prof-use(pass 2)
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-fno-alias -auto-ilp32

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(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

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

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)
-inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

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-revB.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/Lenovo-Platform-Settings-V1.2-revB.xml>

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