



SPEC® CFP2006 Result

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Lenovo Group Limited

Lenovo ThinkServer TS140 (Intel Xeon E3-1245 v3, 3.40 GHz)

SPECfp®2006 = 77.4

SPECfp_base2006 = 75.6

CPU2006 license: 9017

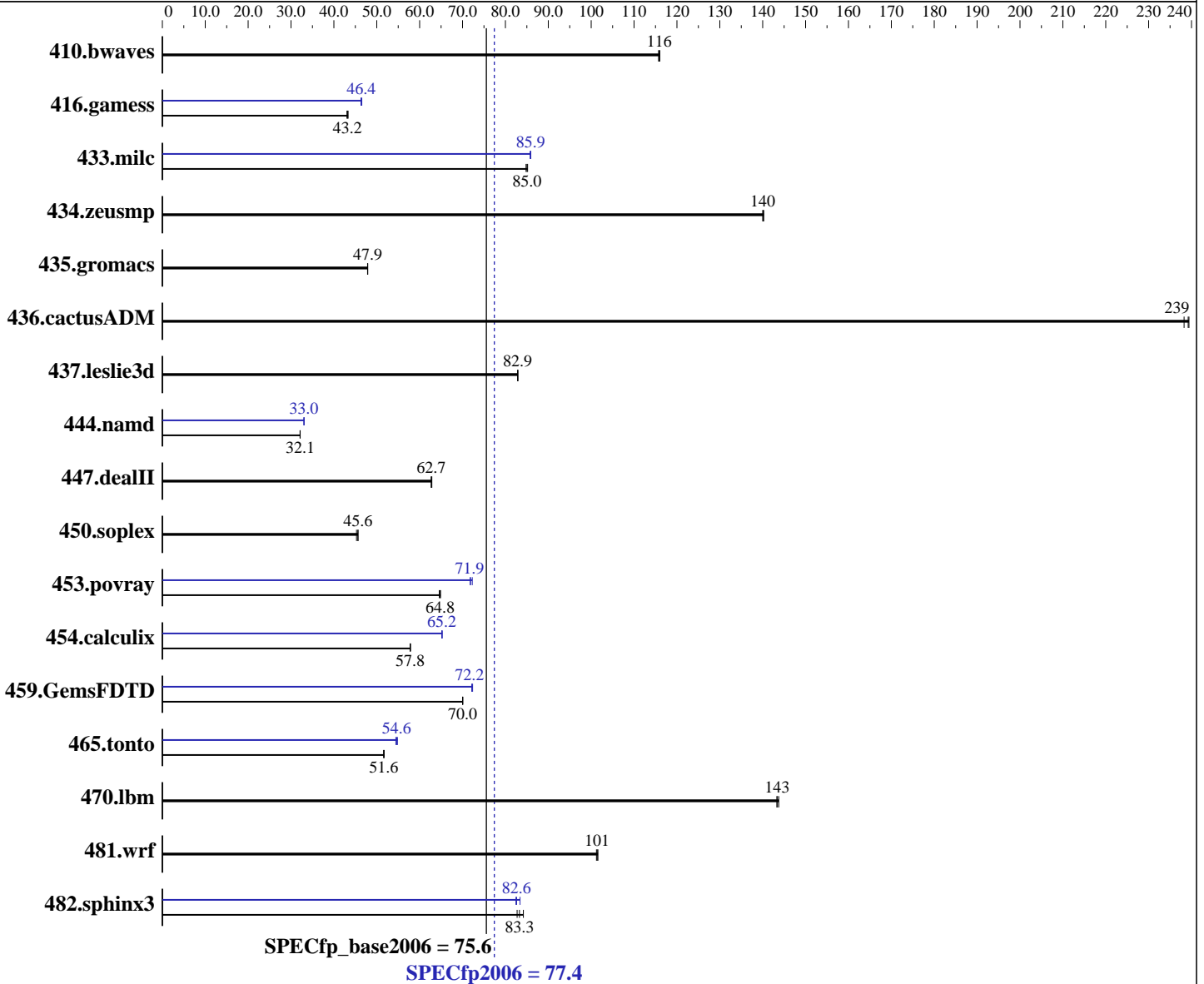
Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Apr-2015

Hardware Availability: Sep-2013

Software Availability: Sep-2014



Hardware

CPU Name: Intel Xeon E3-1245 v3
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz
 CPU MHz: 3400
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 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 7.0 (Maipo)
 3.10.0-123.el7.x86_64
 Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
 Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: xfs

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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 800 GB SATA SSD
Other Hardware: None

System State: Run level 3 (multi-user)
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	<u>117</u>	<u>116</u>	117	116	117	116	<u>117</u>	<u>116</u>	117	116	117	116
416.gamess	452	43.3	<u>453</u>	<u>43.2</u>	455	43.0	<u>422</u>	<u>46.4</u>	423	46.3	421	46.5
433.milc	108	84.8	<u>108</u>	<u>85.0</u>	108	85.2	107	85.8	107	85.9	<u>107</u>	<u>85.9</u>
434.zeusmp	64.9	140	65.0	140	<u>65.0</u>	<u>140</u>	64.9	140	65.0	140	<u>65.0</u>	<u>140</u>
435.gromacs	<u>149</u>	<u>47.9</u>	149	47.9	149	47.9	<u>149</u>	<u>47.9</u>	149	47.9	149	47.9
436.cactusADM	49.9	239	<u>50.0</u>	<u>239</u>	50.2	238	49.9	239	<u>50.0</u>	<u>239</u>	50.2	238
437.leslie3d	<u>113</u>	<u>82.9</u>	113	82.9	113	82.9	<u>113</u>	<u>82.9</u>	113	82.9	113	82.9
444.namd	250	32.1	250	32.1	<u>250</u>	<u>32.1</u>	243	33.0	243	33.0	<u>243</u>	<u>33.0</u>
447.dealII	<u>182</u>	<u>62.7</u>	182	62.8	182	62.7	<u>182</u>	<u>62.7</u>	182	62.8	182	62.7
450.soplex	183	45.6	184	45.3	<u>183</u>	<u>45.6</u>	183	45.6	184	45.3	<u>183</u>	<u>45.6</u>
453.povray	82.0	64.9	<u>82.1</u>	<u>64.8</u>	82.4	64.6	74.1	71.8	<u>74.0</u>	<u>71.9</u>	73.6	72.3
454.calculix	143	57.9	143	57.8	<u>143</u>	<u>57.8</u>	<u>127</u>	<u>65.2</u>	127	65.2	126	65.3
459.GemsFDTD	<u>152</u>	<u>70.0</u>	152	70.0	151	70.1	<u>147</u>	<u>72.2</u>	147	72.2	147	72.4
465.tonto	190	51.7	<u>191</u>	<u>51.6</u>	191	51.6	179	54.8	<u>180</u>	<u>54.6</u>	181	54.5
470.lbm	95.6	144	95.9	143	<u>95.8</u>	<u>143</u>	95.6	144	95.9	143	<u>95.8</u>	<u>143</u>
481.wrf	110	101	110	102	<u>110</u>	<u>101</u>	110	101	110	102	<u>110</u>	<u>101</u>
482.sphinx3	231	84.2	<u>234</u>	<u>83.3</u>	236	82.7	234	83.4	<u>236</u>	<u>82.6</u>	236	82.5

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
Intel(R) Hyper-Threading Technology set to Disabled
Sysinfo program /usr/cpu2006/config/sysinfo.rev6914
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1
running on TS140 Tue Apr 14 04:09:22 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>

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Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E3-1245 v3 @ 3.40GHz
 1 "physical id"s (chips)
 4 "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  : 4
  physical 0: cores 0 1 2 3
cache size : 8192 KB

```

```

From /proc/meminfo
MemTotal:      16157228 kB
HugePages_Total:       0
Hugepagesize:   2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

```

```

uname -a:
Linux TS140 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64
x86_64 x86_64 GNU/Linux

```

run-level 3 Apr 13 23:24

```

SPEC is set to: /usr/cpu2006
Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/sda2       xfs       741G      29G  713G   4% /

```

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.

BIOS LENOVO FBKT99AUS 09/19/2014

```

Memory:
2x Samsung M391B1G73BH0-YK0 8 GB 2 rank 1600 MHz
2x [Empty] [Empty]

```

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Platform Notes (Continued)

(End of data from sysinfo program)

TS140 support 2 channels and 2 DIMMs per channel, total 4 DIMMs.
2DIMM 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"

OMP_NUM_THREADS = "4"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
memory using RedHat EL 7.0

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/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

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Base 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

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



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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

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.dealII: 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

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Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-TS140-revC.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-TS140-revC.xml>

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