# SPEC® CFP2006 Result

## Lenovo Group Limited

**Lenovo ThinkServer TS150**

(2.00 GHz, Intel Xeon E3-1235L v5)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>81.7</td>
<td>79.6</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 9017  
**Test date:** Jan-2016  
**Test sponsor:** Lenovo Group Limited  
**Tested by:** Lenovo Group Limited  
**Hardware Availability:** Oct-2015  
**Software Availability:** Aug-2015

### Software

<table>
<thead>
<tr>
<th>Compiler:</th>
<th>C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System:</td>
<td>SUSE Linux Enterprise Server 12 (x86_64) Kernel 3.12.28-4-default</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E3-1235L v5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2000</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>4 cores, 1 chip, 4 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1 chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

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SPECfp2006 = 81.7
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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (4 x 8 GB 2Rx8 PC4-2133P-U)
Disk Subsystem: 1 x 800 GB SATA SSD
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>97.5</td>
<td>139</td>
<td>97.9</td>
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<td>97.2</td>
<td>140</td>
<td>97.5</td>
<td>139</td>
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<td>416.gamess</td>
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<td>37.3</td>
<td>525</td>
<td>37.3</td>
<td>458</td>
<td>42.7</td>
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<td>433.milc</td>
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<td>97.9</td>
<td>93.9</td>
<td>97.7</td>
<td>94.5</td>
<td>97.1</td>
<td>93.8</td>
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<td>434.zeusmp</td>
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<td>54.4</td>
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<td>435.gromacs</td>
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<td>436.cactusADM</td>
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<td>437.leslie3d</td>
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<td>444.namd</td>
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<td>450.soplex</td>
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<td>453.povray</td>
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<td>459.GemsFDTD</td>
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<td>465.tonto</td>
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<td>187</td>
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<td>481.wrf</td>
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<td>482.sphinx3</td>
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<td>76.1</td>
<td>257</td>
<td>75.9</td>
<td>258</td>
<td>75.6</td>
</tr>
</tbody>
</table>

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:
EIST Support set to Enabled
C1E Support set to Enabled
C State Support set to Enabled
Turbo Mode set to Enable
Sysinfo program /home/cpu2006-1.2-ic16.0/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #s e3fbb8667b5a285932ceab81e28219e1
running on TS150 Sat Jan  9 03:40:06 2016

This section contains SUT (System Under Test) info as seen by
Continued on next page
Platform Notes (Continued)

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 E3-1235L v5 @ 2.00GHz
- 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: 32933324 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

- SuSE-release:
  - SUSE Linux Enterprise Server 12 (x86_64)
  - VERSION = 12
  - PATCHLEVEL = 0
  - # This file is deprecated and will be removed in a future service pack or release.
  - # Please check /etc/os-release for details about this release.
- os-release:
  - NAME="SLES"
  - VERSION="12"
  - VERSION_ID="12"
  - PRETTY_NAME="SUSE Linux Enterprise Server 12"
  - ID="sles"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:12"

uname -a:

- Linux TS150 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014 (9879bd4)
- x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 8 06:23

SPEC is set to: /home/cpu2006-1.2-ic16.0

- Filesystem          Type  Size  Used Avail Use% Mounted on
- /dev/sda3           xfs  693G  27G  667G   4% /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.

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### SPEC CFP2006 Result

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#### Platform Notes (Continued)

- **BIOS** LENOVO FWKT32A  12/25/2015  
- **Memory:** 4x Samsung M378A1G43DB0-CPB 8 GB 2 rank 2133 MHz

(End of data from sysinfo program)

#### General Notes

**Environment variables set by runspec before the start of the run:**  
KMP_AFFINITY = "granularity=fine,compact,1,0"  
LD_LIBRARY_PATH = "/home/cpu2006-1.2-ic16.0/libs/32:/home/cpu2006-1.2-ic16.0/libs/64:/home/cpu2006-1.2-ic16.0/sh"  
OMP_NUM_THREADS = "4"

- Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1  
- 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.game5: `--DSPEC_CPU_LP64`
- 433.milc: `--DSPEC_CPU_LP64`
- 434.zesmp: `--DSPEC_CPU_LP64`
- 435.gromacs: `--DSPEC_CPU_LP64`  
  - `--nofor_main`
- 436.cactusADM: `--DSPEC_CPU_LP64`  
  - `--nofor_main`
- 437.leslie3d: `--DSPEC_CPU_LP64`  
  - `--nofor_main`
- 444.namd: `--DSPEC_CPU_LP64`
- 447.dealII: `--DSPEC_CPU_LP64`
- 450.soplex: `--DSPEC_CPU_LP64`
- 453.povray: `--DSPEC_CPU_LP64`

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Base Portability Flags (Continued)

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 -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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CPU2006 license: 9017
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Hardware Availability: Oct-2015
Software Availability: Aug-2015

Peak Optimization Flags

C benchmarks:
433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:
444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
      -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
      -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
      -auto-llp32

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
      -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
      -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
      -ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
      -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
      -par-num-threads=1(pass 1) -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:threadsafe(pass 1)
      -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
      -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
      -inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
      -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
      -par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc
      -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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## Lenovo Group Limited

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<table>
<thead>
<tr>
<th>Specification</th>
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### Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes  
436.cactusADM: basepeak = yes  
454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-llp32 -ansi-alias  
481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at:


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


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For other inquiries, please contact webmaster@spec.org.

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