Lenovo Group Limited
Lenovo ThinkServer RS160
(3.30 GHz, Intel Xeon E3-1225 v5)

<table>
<thead>
<tr>
<th>SPECfp®2006 = 96.2</th>
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<tbody>
<tr>
<td>SPECfp_base2006 = 93.9</td>
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</table>

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

Test date: Nov-2016
Hardware Availability: Sep-2016
Software Availability: Mar-2016

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>52.7</td>
</tr>
<tr>
<td>416.gamess</td>
<td>46.9</td>
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<tr>
<td>433.milc</td>
<td>109</td>
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<td>434.zeusmp</td>
<td>208</td>
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<tr>
<td>435.gromacs</td>
<td>63.1</td>
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<tr>
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<td>352</td>
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<tr>
<td>437.leslie3d</td>
<td>108</td>
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<tr>
<td>444.namd</td>
<td>36.3</td>
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<td>447.dealII</td>
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<td>75.3</td>
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<tr>
<td>459.GemsFDTD</td>
<td>85.0</td>
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<tr>
<td>481.wrf</td>
<td>127</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>95.7</td>
</tr>
</tbody>
</table>

**SPECfp_base2006 = 93.9; SPECfp2006 = 96.2**

**Hardware**
- CPU Name: Intel Xeon E3-1225 v5
- CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
- CPU MHz: 3300
- FPU: Integrated
- CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
- Primary Cache: 32 KB I + 32 KB D on chip per core
- Secondary Cache: 256 KB I+D on chip per core

**Software**
- Operating System: Red Hat Enterprise Linux Server release 7.2
- Compiler: 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
- Auto Parallel: Yes
- File System: xfs
- System State: Run level 3 (multi-user)
## Lenovo Group Limited

Lenovo ThinkServer RS160
(3.30 GHz, Intel Xeon E3-1225 v5)

---

**SPECfp2006 =** 96.2

**SPECfp_base2006 =** 93.9

---

**CPU2006 license:** 9017  
**Test sponsor:** Lenovo Group Limited  
**Tested by:** Lenovo Group Limited  
**L3 Cache:** 8 MB I+D on chip per chip  
**Memory:** 16 GB (2 x 8 GB 2Rx8 PC4-2133P-E)  
**Disk Subsystem:** 1 x 800 GB SATA SSD  
**Other Hardware:** None  

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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</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"
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

### Platform Notes

BIOS configuration:
Boot performance mode set to Turbo Performance
Sysinfo program /home/cpu2006-1.2-ic16.0/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on RS160 Tue Dec  6 07:06:24 2016

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
Continued on next page
## Lenovo Group Limited

**Lenovo ThinkServer RS160**  
(3.30 GHz, Intel Xeon E3-1225 v5)

### SPEC CFP2006 Result

<table>
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**CPU2006 license:** 9017  
**Test date:** Nov-2016  
**Test sponsor:** Lenovo Group Limited  
**Hardware Availability:** Sep-2016  
**Tested by:** Lenovo Group Limited  
**Software Availability:** Mar-2016

### Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From `/proc/cpuinfo`

```
model name : Intel(R) Xeon(R) CPU E3-1225 v5 @ 3.30GHz
 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
cautions.)
cpu cores : 4
siblings : 4
physical 0: cores 0 1 2 3
```

From `/proc/meminfo`

```
MemTotal:       16376016 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

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

```
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.2 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="7.2"
  PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
```

```
uname -a:
  Linux RS160 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT 2015 x86_64
  x86_64 x86_64 GNU/Linux
run-level 3 Dec 6 02:47
```

### 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 VB1TS152 09/29/2016
Memory:
  2x Not Specified Not Specified
```
Lenovo Group Limited

Lenovo ThinkServer RS160
(3.30 GHz, Intel Xeon E3-1225 v5)

SPECfp2006 = 96.2
SPECfp_base2006 = 93.9

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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Platform Notes (Continued)

2x Samsung M391A1G43EB1-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

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 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

Continued on next page
Lenovo Group Limited
Lenovo ThinkServer RS160
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Base Portability Flags (Continued)
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

Peak Optimization Flags
C benchmarks:
433.milc: basepeak = yes

Continued on next page
Lenovo Group Limited

Lenovo ThinkServer RS160
(3.30 GHz, Intel Xeon E3-1225 v5)

SPECfp2006 = 96.2
SPECfp_base2006 = 93.9

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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Test date: Nov-2016
Hardware Availability: Sep-2016
Software Availability: Mar-2016

Peak Optimization Flags (Continued)

470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
    -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
    -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
    -auto-ilp32

447.dealII: basepeak = yes
450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
    -ipo(pass 2) -03(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

Fortran benchmarks using both Fortran and C:

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
    -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
    -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
    -inline-level=0 -scalar-rep-

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
    -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
    -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
    -opt-malloc-options=3 -auto -unroll4
Lenovo Group Limited

Lenovo ThinkServer RS160
(3.30 GHz, Intel Xeon E3-1225 v5)

SPECfp2006 = 96.2
SPECfp_base2006 = 93.9

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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Test date: Nov-2016
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Peak Optimization Flags (Continued)

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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-BDW-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-BDW-revC.xml

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

Tested with SPEC CPU2006 v1.2.
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