Lenovo Group Limited
Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)

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**CPU2006 license:** 9017  
**Test sponsor:** Lenovo Group Limited  
**Tested by:** Lenovo Group Limited  
**Test date:** Oct-2014  
**Hardware Availability:** Sep-2014  
**Software Availability:** Nov-2014

**Hardware**
- **CPU Name:** Intel Xeon E5-2667 v3
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz
- **CPU MHz:** 3200
- **FPU:** Integrated
- **CPU(s) enabled:** 16 cores, 2 chips, 8 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

**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:** No
- **File System:** ext4

**Continued on next page**
### Lenovo Group Limited

**Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)**

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</table>

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"

### Platform Notes

BIOS configuration:
- Cluster On Die set to Enabled
- Early Snoop set to Disabled

Continued on next page
Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)

**SPEC CFP2006 Result**

| SPECfp_rate2006 | 657 |
| SPECfp_rate_base2006 | 640 |

**CPU2006 license:** 9017  
**Test sponsor:** Lenovo Group Limited  
**Test date:** Oct-2014  
**Tested by:** Lenovo Group Limited  
**Hardware Availability:** Sep-2014  
**Software Availability:** Nov-2014

**Platform Notes (Continued)**

- Performance Profile set to Custom
- C1E Support set to Disabled
- Core C3 set to Disabled
- Core C6 set to Disabled
- Thermal Profile set to High Fan Speed
- Memory Power Savings set to Disabled

SysInfo program /usr/cpu2006/config/sysinfo.rev6818

$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on RD550 Fri Oct 17 09:46:07 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 E5-2667 v3 @ 3.20GHz
- **2 "physical id"s (chips)**
- **32 "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 : 8
  - siblings : 16
  - physical 0: cores 0 1 2 3 4 5 6 7
  - physical 1: cores 0 1 2 3 4 5 6 7
- **cache size : 20480 KB**

From /proc/meminfo

- **MemTotal:** 264413772 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)

uname -a:

Linux RD550 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 Oct 17 00:07

SPEC is set to: /usr/cpu2006

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 730G 63G 631G 10% /

Additional information from dmidecode:

BIOS LENOVO PBIITS110 10/06/2014
Lenovo Group Limited
Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)

SPECfp_rate2006 = 657
SPECfp_rate_base2006 = 640

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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Hardware Availability: Sep-2014
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Memory:
16x 16 GB
8x NO DIMM NO DIMM
16x Samsung M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank

(End of data from sysinfo program)
RD550 support 4 channels and 12 DIMMs per processor, total 8 channels and 24 DIMMs. 16 DIMM slots installed with 16 GB DIMM for this run.

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/usr/cpu2006/libs/32:/usr/cpu2006/libs/64:/usr/cpu2006/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.:
umactl --interleave=all runspec <etc>

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.mlnc: -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
Lenovo Group Limited
Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)

SPECfp_rate2006 = 657
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CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Test date: Oct-2014
Hardware Availability: Sep-2014
Software Availability: Nov-2014

Base Portability Flags (Continued)

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

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64
482.sphinx3: icc -m32

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
Lenovo Group Limited
Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)

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

SPECfp_rate2006 = 657
SPECfp_rate_base2006 = 640

Test date: Oct-2014
Hardware Availability: Sep-2014
Software Availability: Nov-2014

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 -nofor_main
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

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)
       -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
       -auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
             -unroll2

C++ benchmarks:

444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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

Continued on next page
Lenovo Group Limited

Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)

SPECfp_rate2006 = 657
SPECfp_rate_base2006 = 640

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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Hardware Availability: Sep-2014
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Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamek: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xCORE-AVX2 -ipo -03 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(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: -xCORE-AVX2 -ipo -03 -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/Lenovo-Platform-Settings-V1.2-revA.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/Lenovo-Platform-Settings-V1.2-revA.xml
# Lenovo Group Limited

**Lenovo ThinkServer RD550 (Intel Xeon E5-2667 v3, 3.20 GHz)**

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### CPU2006 license: 9017

- **Test sponsor:** Lenovo Group Limited
- **Tested by:** Lenovo Group Limited

- **Test date:** Oct-2014
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For questions about this result, please contact the tester.

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

Tested with SPEC CPU2006 v1.2.


Originally published on 18 November 2014.