## Lenovo Group Limited

IBM NeXtScale nx360 M4  
(Intel Xeon E5-2643 v2, 3.50 GHz)

### Hardware

<table>
<thead>
<tr>
<th>Software</th>
<th>Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago) 2.6.32-358.el6.x86_64</th>
</tr>
</thead>
<tbody>
<tr>
<td>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</td>
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<tr>
<td>Auto Parallel: No</td>
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<tr>
<td>File System: ext4</td>
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### Software

<table>
<thead>
<tr>
<th>CPU Name: Intel Xeon E5-2643 v2</th>
</tr>
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<tbody>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz</td>
</tr>
<tr>
<td>CPU MHz: 3500</td>
</tr>
<tr>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable: 1,2 chips</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Test date: Oct-2014  
Hardware Availability: Nov-2013  
Software Availability: Sep-2013

### SPECfp®_rate2006 = 504

| Test sponsor: Lenovo Group Limited  
Tested by: IBM Corporation |

| SPECfp_rate_base2006 = 504 |

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<td>503</td>
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<td>416.gamess</td>
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<td>480</td>
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<td>437.leslie3d</td>
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<td>459.GemsFD T D</td>
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<td>465.tonto</td>
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<td>482.sphinx3</td>
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**Continued on next page**
Lenovo Group Limited
IBM NeXtScale nx360 M4
(Intel Xeon E5-2643 v2, 3.50 GHz)

TEST DATE: Oct-2014
CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: IBM Corporation
Hardware Availability: Nov-2013
Tested by: IBM Corporation
Software Availability: Sep-2013

SPEC Rate2006 = 504
SPEC Rate2006 Base = 504

Results Table

<table>
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<tr>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>551</td>
<td>853</td>
<td>548</td>
<td>851</td>
<td>549</td>
</tr>
</tbody>
</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"
Zone reclaim mode enabled with:
echo 1 > /proc/sys/vm/zone_reclaim_mode
Intel Idle Driver disabled with the following Linux kernel parameter in /etc/grub.conf:
intel_idle.max_cstate=0
Lenovo Group Limited

IBM NeXtScale nx360 M4
(Intel Xeon E5-2643 v2, 3.50 GHz)

SPEC CFP2006 Result

SPECfp_rate2006 = 504
SPECfp_rate_base2006 = 504

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

Test date: Oct-2014
Hardware Availability: Nov-2013
Software Availability: Sep-2013

Platform Notes

BIOS setting:
Operating Mode set to Maximum Performance
Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6874
$Rev: 6874 $ $Date:: 2013-11-20 #$ 654bd3fcf53b06fae0efe54ed011998
running on nx360M4 Tue Oct 14 00:59:03 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 E5-2643 v2 @ 3.50GHz
  2 "physical id"s (chips)
  24 "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 : 6
siblings : 12
physical 0: cores 2 3 4 8 9 10
physical 1: cores 2 3 4 8 9 10
cache size : 25600 KB

From /proc/meminfo
MemTotal: 132089100 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
Linux nx360M4 2.6.32-358.e16.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 13 14:23

SPEC is set to: /home/SPECcpu-20140116-ic14.0
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/vg_nx360m4-lv_home
  ext4 403G 14G 370G 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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CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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Platform Notes (Continued)

BIOS IBM -[FHE107NUS-1.20]- 06/03/2014
Memory:
8x Samsung M393B2G70QH0-CMA 16 GB 2 rank 1866 MHz, configured at 1867 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = */home/SPECcpu-20140116-ic14.0/libs/32:/home/SPECcpu-20140116-ic14.0/libs/64:/home/SPECcpu-20140116-ic14.0/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.:
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  -nofor_main
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

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SPECfp_rate2006 = 504
SPECfp_rate_base2006 = 504

CPU2006 license: 9017
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Base Portability Flags (Continued)

450.soplex: -DSPEC_CPU_LP64
453 POVray: -DSPEC_CPU_LP64
454.Calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTP: -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:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3

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

Fortran benchmarks:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch

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

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
Lenovo Group Limited
IBM NeXtScale nx360 M4
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SPEC CFP2006 Result

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

SPECfp_rate2006 = 504
SPECfp_rate_base2006 = 504

Test date: Oct-2014
Hardware Availability: Nov-2013
Software Availability: Sep-2013

Peak Optimization Flags

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

C++ benchmarks:
444.namd: basepeak = yes
447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: basepeak = yes

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: basepeak = yes
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: basepeak = yes
465.tonto: basepeak = yes

Benchmarks using both Fortran and C:
435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: basepeak = yes
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/IBM-Platform-Flags-V1.2-IVB-C.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/IBM-Platform-Flags-V1.2-IVB-C.xml
**Lenovo Group Limited**

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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