Lenovo Group Limited
Lenovo ThinkServer TS140 (Intel Xeon E3-1220 v3, 3.10 GHz)

SPECint®_rate2006 = 175
SPECint_rate_base2006 = 169

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

Hardware
CPU Name: Intel Xeon E3-1220 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz: 3100
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
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

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
Auto Parallel: No
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0

Test date: Jan-2015
Hardware Availability: Sep-2013
Software Availability: Sep-2014
Lenovo Group Limited

Lenovo ThinkServer TS140 (Intel Xeon E3-1220 v3, 3.10 GHz)

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

SPECint_rate2006 = 175
SPECint_rate_base2006 = 169

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td></td>
<td></td>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>4</td>
<td>282</td>
<td>138</td>
<td>282</td>
<td>138</td>
<td>282</td>
<td>138</td>
<td>282</td>
<td>138</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>4</td>
<td>248</td>
<td>130</td>
<td>248</td>
<td>130</td>
<td>248</td>
<td>130</td>
<td>248</td>
<td>130</td>
</tr>
<tr>
<td>403.mcf</td>
<td>4</td>
<td>401</td>
<td>105</td>
<td>401</td>
<td>105</td>
<td>401</td>
<td>105</td>
<td>401</td>
<td>105</td>
</tr>
<tr>
<td>429.gobmk</td>
<td>4</td>
<td>390</td>
<td>124</td>
<td>390</td>
<td>124</td>
<td>390</td>
<td>124</td>
<td>390</td>
<td>124</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>4</td>
<td>50.2</td>
<td>83.6</td>
<td>50.2</td>
<td>83.6</td>
<td>50.2</td>
<td>83.6</td>
<td>50.2</td>
<td>83.6</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>4</td>
<td>308</td>
<td>91.2</td>
<td>308</td>
<td>91.2</td>
<td>308</td>
<td>91.2</td>
<td>308</td>
<td>91.2</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>4</td>
<td>134</td>
<td>206</td>
<td>134</td>
<td>206</td>
<td>134</td>
<td>206</td>
<td>134</td>
<td>206</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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
ICE Performance Modes set to Full Speed
C1E Support set to Disabled
C State Support set to CIC3C6
Sysinfo program /usr/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #e3fbb8667b5a285932ceab81e28219e1
running on TS140 Tue Jan 13 01:27:43 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

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E3-1220 v3 @ 3.10GHz
  1 "physical id"s (chips)
  4 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The Continued on next page
Lenovo Group Limited

Lenovo ThinkServer TS140 (Intel Xeon E3-1220 v3, 3.10 GHz)

SPECint_rate2006 = 175
SPECint_rate_base2006 = 169

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

Test date: Jan-2015
Hardware Availability: Sep-2013
Software Availability: Sep-2014

Platform Notes (Continued)

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: 16190088 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 Jan 13 01:27

    SPEC is set to: /usr/cpu2006
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sda2 xfs 741G 24G 718G 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 M391B1G73QH0-YK0 8 GB 2 rank 1600 MHz
    2x [Empty] [Empty]

    (End of data from sysinfo program)
    TS140 support 2 channels and 2 DIMMs per channel, total 4 DIMMs.
    2 DIMM slots installed with 8 GB DIMM for this run.
General Notes

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 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 -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

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

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs
-L/sh -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Continued on next page
Lenovo Group Limited

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

Lenovo ThinkServer TS140 (Intel Xeon E3-1220 v3, 3.10 GHz)

SPECint_rate2006 = 175
SPECint_rate_base2006 = 169

Test date: Jan-2015
Hardware Availability: Sep-2013
Software Availability: Sep-2014

Peak Compiler Invocation (Continued)

400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32 -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -03 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

456.hmmer: -xCORE-AVX2 -ipo -03 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -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-ilp32

Continued on next page
Lenovo Group Limited

Lenovo ThinkServer TS140 (Intel Xeon E3-1220 v3, 3.10 GHz)

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>9017</th>
<th>Test date:</th>
<th>Jan-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Lenovo Group Limited</td>
<td>Hardware Availability:</td>
<td>Sep-2013</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Lenovo Group Limited</td>
<td>Software Availability:</td>
<td>Sep-2014</td>
</tr>
</tbody>
</table>

**SPEC CINT2006 Result**

**SPECint_rate2006** = 175

**SPECint_rate_base2006** = 169

Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalanchbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

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-revA.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-revA.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.
Report generated on Tue Feb 10 18:34:23 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 10 February 2015.