Lenovo Group Limited

Lenovo System x3100 M5
(Intel Xeon E3-1285 v3, 4.00 GHz)

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

Test date: Aug-2015
Hardware Availability: May-2014
Software Availability: Jun-2014

SPECint_rate2006 = 220
SPECint_rate_base2006 = 212

CPU Name: Intel Xeon E3-1285 v3
CPU Characteristics: Intel Turbo Boost Technology up to 4.00 GHz
CPU MHz: 3600
FPU: Integrated
CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1 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 (4 x 4 GB 2Rx8 PC3L-12800E-11, ECC)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

Operating System: Red Hat Enterprise Linux Server release 7.1 (Maipo)
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
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Results Table

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<th>Ratio</th>
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<td>232</td>
<td>239</td>
<td>231</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 setting:
Operating Mode set to "Efficiency-Favor Performance"
Sysinfo program /root/cpu2006_ic15/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on x3100m5.labs.lenovo.com Tue Aug 25 07:35:58 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 E3-1285 v3 @ 3.60GHz
1 "physical id"s (chips)
8 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
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Platform Notes (Continued)

cpu cores : 4
siblings : 8
physical 0: cores 0 1 2 3
cache size : 8192 KB

From /proc/meminfo
MemTotal: 16100780 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.1 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.1"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

uname -a:
Linux x3100m5.labs.lenovo.com 3.10.0-229.e17.x86_64 #1 SMP Thu Jan 29
18:37:38 EST 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 25 07:06

SPEC is set to: /root/cpu2006_ic15
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs 50G 25G 26G 49% /

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 IBM -[J9E113LUS-1.05]- 07/06/2014
Memory:
4x Hynix/Hyundai HMT351U7EFR8A-PB 4 GB 2 rank 1600 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006_ic15/libs/32:/root/cpu2006_ic15/libs/64:/root/cpu2006_ic15/sh"

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SPEC CINT2006 Result

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General Notes (Continued)

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
400.perlbench: icc -m64

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**SPECint_rate2006** = 220  
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**Peak Compiler Invocation (Continued)**

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

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

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**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

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**Peak Optimization Flags**

C benchmarks:

- 400.perlbench: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(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) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch -auto-ilp32 -ansi-alias
- 403.gcc: -xCORE-AVX2 -ipo -O3 -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 -O3 -no-prec-div -unroll12 -auto-ilp32
- 458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll14 -auto-ilp32
- 462.libquantum: basepeak = yes

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### Test Details
- **Test date:** Aug-2015  
- **Hardware Availability:** May-2014
- **Software Availability:** Jun-2014
- **Lenovo Group Limited**

### Peak Optimization Flags (Continued)

- **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.xalancbmk:** 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:

- [Intel.ic15.0-official-linux64.html](http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html)
- [IBM-Platform-Flags-V1.2-HSW-A.20150909.html](http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-A.20150909.html)

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

- [Intel.ic15.0-official-linux64.xml](http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml)
- [IBM-Platform-Flags-V1.2-HSW-A.20150909.xml](http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-HSW-A.20150909.xml)

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