Lenovo Group Limited

Lenovo System x3100 M5
(Intel Xeon E3-1286 v3, 4.10 GHz)

SPECint\textsubscript{rate2006} = 227

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

**Hardware**

- CPU Name: Intel Xeon E3-1286 v3
- CPU Characteristics: Intel Turbo Boost Technology up to 4.10 GHz
- CPU MHz: 3700
- FPU: Integrated
- CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
- CPU(s) orderable: 1 chip
- Primary Cache: IP 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

**Software**

- Operating System: Red Hat Enterprise Linux Server release 7.1 (Maipo) 3.10.0-229.el7.x86_64
- Compiler: C\texttt{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
Lenovo Group Limited

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(Intel Xeon E3-1286 v3, 4.10 GHz)

SPECint_rate2006 = 227
SPECint_rate_base2006 = 218

Results Table

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<thead>
<tr>
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<th>Seconds</th>
<th>Ratio</th>
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<td>238</td>
<td>236</td>
<td>234</td>
<td>233</td>
<td>237</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 Thu Aug 27 18:32:13 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 E3-1286 v3 @ 3.70GHz
  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.)
Lenovo Group Limited

Lenovo System x3100 M5
(Intel Xeon E3-1286 v3, 4.10 GHz)

| SPECint_rate2006 | 227 |
| SPECint_rate_base2006 | 218 |

**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

Platform Notes (Continued)

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

From `/proc/meminfo`

```
MemTotal:       16100788 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

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

```
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.el7.x86_64 #1 SMP Thu Jan 29 18:37:38 EST 2015 x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Aug 27 18:12
```

```
SPEC is set to: /root/cpu2006_ic15
```

```
Filesystem            Type  Size  Used  Avail Use% Mounted on
/dev/mapper/rhel-root xfs    50G   25G   26G  50% /
```

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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Lenovo Group Limited
Lenovo System x3100 M5
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**SPEClnt_rate2006** = 227
**SPEClnt_rate_base2006** = 218

**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
Lenovo Group Limited

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CPU2006 license: 9017
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Tested by: Lenovo Group Limited

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

Peak Compiler Invocation (Continued)

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

C++ benchmarks:
icpc -m32 -L/opt/intel/compiler_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)
-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 -unroll2 -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)
-unroll4 -auto-ilp32

462.libquantum: basepeak = yes

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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.xalanchtmk: 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-Flags-V1.2-HSW-B.20150923.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-Flags-V1.2-HSW-B.20150923.xml

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

Tested with SPEC CPU2006 v1.2.
Originally published on 22 September 2015.