**Fujitsu**

PRIMERGY RX2530 M4, Intel Xeon Gold 6138, 2.00GHz

**SPECint®_rate2006 = Not Run**

**SPECint_rate_base2006 = 1770**

**Hardware**

- **CPU Name:** Intel Xeon Gold 6138
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz
- **CPU MHz:** 2000
- **FPU:** Integrated
- **CPU(s) enabled:** 40 cores, 2 chips, 20 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:** 1 MB I+D on chip per core
- **L3 Cache:** 27.5 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)
- **Disk Subsystem:** 752 GB tmpfs
- **Other Hardware:** None

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 SP2 4.4.21-69-default
- **Compiler:** C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux
- **Auto Parallel:** No
- **File System:** tmpfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32-bit
- **Peak Pointers:** Not Applicable
- **Other Software:** Microquill SmartHeap V10.2
## SPEC CINT2006 Result

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### 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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>80</td>
<td>587</td>
<td>1330</td>
<td>585</td>
<td>1340</td>
<td><strong>586</strong></td>
<td><strong>1330</strong></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>80</td>
<td>930</td>
<td>830</td>
<td>932</td>
<td>829</td>
<td><strong>931</strong></td>
<td><strong>829</strong></td>
</tr>
<tr>
<td>403.gcc</td>
<td>80</td>
<td>494</td>
<td>1300</td>
<td>492</td>
<td>1310</td>
<td><strong>494</strong></td>
<td><strong>1300</strong></td>
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<tr>
<td>429.mcf</td>
<td>80</td>
<td>282</td>
<td>2590</td>
<td>283</td>
<td>2580</td>
<td><strong>283</strong></td>
<td><strong>2580</strong></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>80</td>
<td>734</td>
<td>1140</td>
<td>732</td>
<td>1150</td>
<td><strong>733</strong></td>
<td><strong>1150</strong></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>80</td>
<td>295</td>
<td><strong>2530</strong></td>
<td>295</td>
<td>2530</td>
<td>298</td>
<td>2500</td>
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<tr>
<td>458.sjeng</td>
<td>80</td>
<td>771</td>
<td>1250</td>
<td>777</td>
<td>1250</td>
<td><strong>773</strong></td>
<td><strong>1250</strong></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>80</td>
<td>97.1</td>
<td>17100</td>
<td><strong>97.1</strong></td>
<td><strong>17100</strong></td>
<td>96.9</td>
<td>17100</td>
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<tr>
<td>464.h264ref</td>
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<td><strong>824</strong></td>
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<td>2140</td>
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<td>2150</td>
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<tr>
<td>471.omnetpp</td>
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<td><strong>958</strong></td>
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<td>960</td>
<td>524</td>
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<td>473.astar</td>
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<td>996</td>
<td>565</td>
<td>993</td>
<td><strong>565</strong></td>
<td><strong>994</strong></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>80</td>
<td>271</td>
<td>2040</td>
<td>271</td>
<td>2030</td>
<td><strong>271</strong></td>
<td><strong>2030</strong></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"
Kernel Boot Parameter set with: nohz_full=1-79
Turbo mode set with:
cpupower -c all frequency-set -g performance
Tmpfs filesystem can be set with:
mkdir /home/memory
mount -t tmpfs -o size=752g, rw tmpfs /home/memory
Process tunning setting:
echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns
echo 15000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
echo 0 > /proc/sys/kernel/numa_balancing
cpu idle state set with:
cpupower idle-set -d 1
cpupower idle-set -d 2

### Platform Notes

BIOS configuration:
Link Frequency Select = 10.4 GT/s
HWPM Support = Disabled
Intel Virtualization Technology = Disabled
SPEC CINT2006 Result

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CPU2006 license: 19
Test sponsor: Fujitsu
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Test date: Aug-2017
Hardware Availability: Jul-2017
Software Availability: Apr-2017

Platform Notes (Continued)

Sub NUMA Clustering = Enabled
IMC Interleaving = 1-way
LLC Dead Line Alloc = Disabled
Stale AtoS = Enabled
Sysinfo program /home/memory/SPECcpu/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-vv4c Fri Aug 11 05:43:29 2017

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) Gold 6138 CPU @ 2.00GHz
  2 "physical id"s (chips)
  80 "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 : 20
siblings : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 28160 KB

From /proc/meminfo
MemTotal:       394412256 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
SuSE-release:
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 2
    # This file is deprecated and will be removed in a future service pack or release.
    # Please check /etc/os-release for details about this release.
  os-release:
    NAME="SLES"
    VERSION="12-SP2"
    VERSION_ID="12.2"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
  Linux linux-vv4c 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
Continued on next page
Platform Notes (Continued)

(9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 10 23:17

SPEC is set to: /home/memory/SPECcpu

Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 752G 4.6G 748G 1% /home/memory

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 FUJITSU // American Megatrends Inc. V5.0.0.12 R1.4.1 for D3383-A1x
06/19/2017
Memory:
24x Samsung M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:

LD_LIBRARY_PATH = "/home/memory/SPECcpu/lib/ia32:/home/memory/SPECcpu/lib/intel64:/home/memory/SPECcpu/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
runspec command invoked through numactl i.e.:
umactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32

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### Base Portability Flags (Continued)

- 401.bzip2: -D_FILE_OFFSET_BITS=64
- 403.gcc: -D_FILE_OFFSET_BITS=64
- 429.mcf: -D_FILE_OFFSET_BITS=64
- 445.gobmk: -D_FILE_OFFSET_BITS=64
- 456.hmmer: -D_FILE_OFFSET_BITS=64
- 458.sjeng: -D_FILE_OFFSET_BITS=64
- 462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
- 464.h264ref: -D_FILE_OFFSET_BITS=64
- 471.omnetpp: -D_FILE_OFFSET_BITS=64
- 473.astar: -D_FILE_OFFSET_BITS=64
- 483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

### Base Optimization Flags

**C benchmarks:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- -qopt-mem-layout-trans=3

**C++ benchmarks:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- -qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap

### Base Other Flags

**C benchmarks:**
- 403.gcc: -Dalloca=_alloca

The flags files that were used to format this result can be browsed at:
- [Intel-ic17.0-official-linux64-revF.html](http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html)
- [Fujitsu-Platform-Settings-V1.2-SKL-RevA.html](http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevA.html)

You can also download the XML flags sources by saving the following links:
- [Intel-ic17.0-official-linux64-revF.xml](http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml)
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For other inquiries, please contact webmaster@spec.org.

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