SPEC® CFP2006 Result

Fujitsu
PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

SPECfp®_rate2006 = Not Run
SPECfp_rate_base2006 = 1080

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

Test date: Aug-2017
Hardware Availability: Jul-2017
Software Availability: Apr-2017

Fujitsu
PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

SPECfp_rate_base2006 = 1080

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: SUSE Linux Enterprise Server 12 SP2 4.4.21-69-default</td>
<td>CPU Name: Intel Xeon Gold 5120</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux</td>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz</td>
</tr>
<tr>
<td>Auto Parallel: No</td>
<td>CPU MHz: 2200</td>
</tr>
<tr>
<td>File System: tmpfs</td>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td></td>
<td>CPU(s) orderable: 1.2 chips</td>
</tr>
<tr>
<td></td>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td></td>
<td>Secondary Cache: 1 MB I+D on chip per core</td>
</tr>
</tbody>
</table>

Continued on next page
SPEC CFP2006 Result

Fujitsu

PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 1080

<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>410.bwaves</td>
<td>56</td>
<td>804</td>
<td>946</td>
<td>804</td>
<td>946</td>
<td>804</td>
<td>946</td>
</tr>
<tr>
<td>416.gamess</td>
<td>56</td>
<td>1040</td>
<td>1050</td>
<td>1040</td>
<td>1050</td>
<td>1040</td>
<td>1050</td>
</tr>
<tr>
<td>433.milc</td>
<td>56</td>
<td>556</td>
<td>924</td>
<td>557</td>
<td>924</td>
<td>556</td>
<td>924</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>56</td>
<td>379</td>
<td>1340</td>
<td>379</td>
<td>1350</td>
<td>376</td>
<td>1360</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>56</td>
<td>321</td>
<td>1250</td>
<td>322</td>
<td>1240</td>
<td>322</td>
<td>1240</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>56</td>
<td>450</td>
<td>1490</td>
<td>451</td>
<td>1480</td>
<td>450</td>
<td>1490</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>56</td>
<td>798</td>
<td>660</td>
<td>790</td>
<td>666</td>
<td>786</td>
<td>670</td>
</tr>
<tr>
<td>444.namd</td>
<td>56</td>
<td>517</td>
<td>869</td>
<td>517</td>
<td>869</td>
<td>518</td>
<td>867</td>
</tr>
<tr>
<td>447.dealII</td>
<td>56</td>
<td>364</td>
<td>1760</td>
<td>365</td>
<td>1760</td>
<td>365</td>
<td>1760</td>
</tr>
<tr>
<td>450.soplex</td>
<td>56</td>
<td>682</td>
<td>685</td>
<td>682</td>
<td>685</td>
<td>681</td>
<td>686</td>
</tr>
<tr>
<td>453.povray</td>
<td>56</td>
<td>194</td>
<td>1530</td>
<td>192</td>
<td>1550</td>
<td>194</td>
<td>1540</td>
</tr>
<tr>
<td>454.calculix</td>
<td>56</td>
<td>284</td>
<td>1630</td>
<td>285</td>
<td>1620</td>
<td>287</td>
<td>1610</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>56</td>
<td>958</td>
<td>620</td>
<td>961</td>
<td>619</td>
<td>959</td>
<td>620</td>
</tr>
<tr>
<td>465.tonto</td>
<td>56</td>
<td>495</td>
<td>1110</td>
<td>493</td>
<td>1120</td>
<td>496</td>
<td>1110</td>
</tr>
<tr>
<td>470.lbm</td>
<td>56</td>
<td>625</td>
<td>1230</td>
<td>625</td>
<td>1230</td>
<td>625</td>
<td>1230</td>
</tr>
<tr>
<td>481.wrf</td>
<td>56</td>
<td>550</td>
<td>1140</td>
<td>551</td>
<td>1130</td>
<td>552</td>
<td>1130</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>56</td>
<td>1049</td>
<td>1040</td>
<td>1046</td>
<td>1040</td>
<td>1046</td>
<td>1040</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=1-55
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

Continued on next page
Fujitsu
PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 1080

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

Operating System Notes (Continued)

Process tuning 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
- Sub NUMA Clustering = Enabled
- IMC Interleaving = 1-way
- LLC Dead Line Alloc = Disabled
- Stale AtS = Enabled
- Sysinfo program /home/memory/SPECcpu/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-vv4c Fri Aug 18 08:51:45 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 5120 CPU @ 2.20GHz
- 2 "physical id"s (chips)
- 56 "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 : 14
  - siblings : 28
  - physical 0 : cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  - physical 1 : cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
- cache size : 19712 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 Linux Enterprise Server 12 (x86_64)
  - VERSION = 12

Continued on next page
Fujitsu

PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 1080

Platform Notes (Continued)

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
(9464f67) x86_64 x86_64 x86_64 GNU/Linux

runt-level 3 Aug 17 21:00

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, configured at 2400 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 numaclt i.e.:
umactl --interleave=all runspec <etc>

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
SPEC CFP2006 Result

Fujitsu
PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 1080

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu

Test date: Aug-2017
Hardware Availability: Jul-2017
Software Availability: Apr-2017

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
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
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -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:
   -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
   -qopt-mem-layout-trans=3

C++ benchmarks:
   -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
   -qopt-mem-layout-trans=3

Fortran benchmarks:
   -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Continued on next page
### Fujitsu

PRIMERGY RX2530 M4, Intel Xeon Gold 5120, 2.20GHz

**SPECfp_rate2006** = Not Run
**SPECfp_rate_base2006** = 1080

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>19</th>
<th>Test date:</th>
<th>Aug-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Fujitsu</td>
<td>Hardware Availability:</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Fujitsu</td>
<td>Software Availability:</td>
<td>Apr-2017</td>
</tr>
</tbody>
</table>

### Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

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

---

SPEC and SPECfp 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.
Originally published on 20 September 2017.