### Fujiitsu

**PRIMEQUEST 3800B, Intel Xeon Platinum 8156, 3.60GHz**

**SPECfp®_rate2006 = Not Run**

**SPECfp_rate_base2006 = 2160**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Platinum 8156</td>
<td>Operating System: SUSE Linux Enterprise Server 12 SP2</td>
</tr>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz</td>
<td>Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux</td>
</tr>
<tr>
<td>CPU MHZ: 3600</td>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>FPU: Integrated</td>
<td>File System: tmpfs</td>
</tr>
<tr>
<td>CPU(s) enabled: 32 cores, 8 chips, 4 cores/chip, 2 threads/core</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>CPU(s) orderable: 2,4,6,8 chips</td>
<td></td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
<td></td>
</tr>
<tr>
<td>Secondary Cache: 1 MB I+D on chip per core</td>
<td></td>
</tr>
</tbody>
</table>

**Copies**

<table>
<thead>
<tr>
<th>Spec</th>
<th>Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>63</td>
</tr>
<tr>
<td>416.gamess</td>
<td>63</td>
</tr>
<tr>
<td>433.milc</td>
<td>63</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>63</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>63</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>63</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>63</td>
</tr>
<tr>
<td>444.namd</td>
<td>63</td>
</tr>
<tr>
<td>447.dealII</td>
<td>63</td>
</tr>
<tr>
<td>450.soplex</td>
<td>63</td>
</tr>
<tr>
<td>453.povray</td>
<td>63</td>
</tr>
<tr>
<td>454.calculix</td>
<td>63</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>63</td>
</tr>
<tr>
<td>465.tonto</td>
<td>63</td>
</tr>
<tr>
<td>470.lbm</td>
<td>63</td>
</tr>
<tr>
<td>481.wrf</td>
<td>63</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>63</td>
</tr>
<tr>
<td><strong>SPECfp_rate_base2006 = 2160</strong></td>
<td></td>
</tr>
</tbody>
</table>

**CPU2006 license**: 19  
**Test sponsor**: Fujitsu  
**Tested by**: Fujitsu  
**Test date**: Oct-2017  
**Hardware Availability**: Jul-2017  
**Software Availability**: Sep-2017
Fujitsu
PRIMEQUEST 3800B, Intel Xeon Platinum 8156, 3.60GHz

SPEC CFP2006 Result

SPECfp_rate2006 =  Not Run
SPECfp_rate_base2006 = 2160

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu
Test date: Oct-2017
Hardware Availability: Jul-2017
Software Availability: Sep-2017

L3 Cache: 16.5 MB I+D on chip per chip
Other Cache: None
Memory: 1536 GB (96 x 16 GB 2Rx4 PC4-2666V-R)
Disk Subsystem: 768 GB tmpfs
Other Hardware: 1 x SAS HDD, 600 GB, 10.5K RPM, used for swap

Base Pointers: 32/64-bit
Peak Pointers: Not Applicable
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>63</td>
<td>307</td>
<td>2790</td>
<td>304</td>
<td>2810</td>
<td>304</td>
<td>2820</td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>63</td>
<td>721</td>
<td>1710</td>
<td>721</td>
<td>1710</td>
<td>720</td>
<td>1710</td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>63</td>
<td>204</td>
<td>2830</td>
<td>203</td>
<td>2850</td>
<td>204</td>
<td>2830</td>
<td></td>
</tr>
<tr>
<td>434.reusmp</td>
<td>63</td>
<td>233</td>
<td>2460</td>
<td>234</td>
<td>2450</td>
<td>233</td>
<td>2460</td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td>63</td>
<td>187</td>
<td>2410</td>
<td>187</td>
<td>2400</td>
<td>191</td>
<td>2350</td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>63</td>
<td>275</td>
<td>2740</td>
<td>273</td>
<td>2760</td>
<td>277</td>
<td>2720</td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>63</td>
<td>451</td>
<td>1310</td>
<td>449</td>
<td>1320</td>
<td>447</td>
<td>1330</td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td>63</td>
<td>358</td>
<td>1410</td>
<td>359</td>
<td>1410</td>
<td>359</td>
<td>1410</td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td>63</td>
<td>251</td>
<td>2870</td>
<td>258</td>
<td>2800</td>
<td>255</td>
<td>2830</td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td>63</td>
<td>360</td>
<td>1460</td>
<td>360</td>
<td>1460</td>
<td>359</td>
<td>1460</td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td>63</td>
<td>134</td>
<td>2500</td>
<td>135</td>
<td>2490</td>
<td>134</td>
<td>2500</td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td>63</td>
<td>193</td>
<td>2700</td>
<td>195</td>
<td>2670</td>
<td>196</td>
<td>2650</td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>63</td>
<td>544</td>
<td>1230</td>
<td>544</td>
<td>1230</td>
<td>545</td>
<td>1230</td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td>63</td>
<td>292</td>
<td>2120</td>
<td>298</td>
<td>2080</td>
<td>292</td>
<td>2120</td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>63</td>
<td>353</td>
<td>2450</td>
<td>354</td>
<td>2450</td>
<td>353</td>
<td>2450</td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>63</td>
<td>209</td>
<td>3370</td>
<td>207</td>
<td>3390</td>
<td>206</td>
<td>3410</td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>63</td>
<td>638</td>
<td>1920</td>
<td>639</td>
<td>1920</td>
<td>639</td>
<td>1920</td>
<td></td>
</tr>
</tbody>
</table>

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"
Set Kernel Boot Parameter: nohz_full=1-63 isolcpus=1-63
Set CPU frequency governor to maximum performance with:
cpupower -- all frequency-set -g performance
Set tmpfs filesystem with:
mkdir /home/memory
mount -t tmpfs -o size=768g,rw tmpfs /home/memory
Process tuning settings:

Continued on next page
**Operating System Notes (Continued)**

- echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns
- echo 15000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
- echo 0 > /proc/sys/kernel/nr_numa_balancing
- echo always > /sys/kernel/mm/transparent_hugepage/enabled
- cpu idle state set with:
  - cpupower idle-set -d 2
  - cpupower idle-set -d 3
- set affinity of rcu threads to the cpu0:
  - for i in `pgrep rcu` ; do taskset -pc 0 $i ; done

**Platform Notes**

**BIOS configuration:**
- Intel Virtualization Technology = Disabled
- HWPM Support = Disabled
- DCU Streamer Prefetcher = Disabled
- Stale AtoS = Enabled
- LLC dead line alloc = Disabled
- Sub NUMA Clustering = Enabled
- Fan Control = Full

Sysinfo program /home/memory/speccpu/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-k55j Wed Oct 25 11:35:52 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) Platinum 8156 CPU @ 3.60GHz
- 8 "physical id"s (chips)
- 64 "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 : 4
  - siblings : 8
  - physical 0: cores 1 5 9 13
  - physical 1: cores 1 5 9 13
  - physical 2: cores 1 5 9 13
  - physical 3: cores 1 2 5 11
  - physical 4: cores 5 8 10 11
  - physical 5: cores 0 8 11 12
  - physical 6: cores 1 5 9 13
  - physical 7: cores 1 5 9 13
- cache size : 16896 KB

From /proc/meminfo

- MemTotal: 1583837096 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB
Fujitsu
PRIMEQUEST 3800B, Intel Xeon Platinum 8156, 3.60GHz

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 2160

Platform Notes (Continued)

From /etc/*release* /etc/*version*
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:
   (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 25 06:51
SPEC is set to: /home/memory/speccpu

Filesystem     Type   Size  Used Avail Use% Mounted on
tmpfs          tmpfs  768G  9.7G  759G   2% /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 V1.0.0.0 R1.21.0 for D3858-A1x 09/15/2017
   Memory:
      48x Hynix HMA42GR7BJR4N-VK 16 GB 2 rank 2666 MHz
      48x 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/icc2018lib/ia32:/home/memory/speccpu/icc2018lib/intel64"
LD_LIBRARY_PATH = "${LD_LIBRARY_PATH:/home/memory/speccpu/sh10.2"

Binaries compiled on a system with 2x Intel Xeon Platinum 8180 CPU + 384GB RAM
memory using SUSE Linux Enterprise Server 12 SP2
Transparent Huge Pages enabled with:
   echo always > /sys/kernel/mm/transparent_hugepage/enabled

Continued on next page
Fujitsu
PRIMEQUEST 3800B, Intel Xeon Platinum 8156, 3.60GHz

<table>
<thead>
<tr>
<th>SPECfp_rate2006 =</th>
<th>Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2006 =</td>
<td>2160</td>
</tr>
</tbody>
</table>

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu
Test date: Oct-2017
Hardware Availability: Jul-2017
Software Availability: Sep-2017

General Notes (Continued)

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.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
```shell
icc -m64
```

C++ benchmarks:
```shell
icpc -m64
```

Fortran benchmarks:
```shell
ifort -m64
```

Benchmarks using both Fortran and C:
```shell
icc -m64 ifort -m64
```

Base Portability Flags

| 410.bwaves | -DSPEC_CPU_LP64 |
| 416.gamess | -DSPEC_CPU_LP64 |
| 433.milc  | -DSPEC_CPU_LP64 |
| 434.ezusmp| -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 -nofor_main |
| 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:
```shell
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```
### SPEC CFP2006 Result

**Fujitsu**

**PRIMEQUEST 3800B, Intel Xeon Platinum 8156, 3.60GHz**

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Fujitsu</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Fujitsu</td>
</tr>
</tbody>
</table>

**SPECfp_rate2006 = Not Run**

**SPECfp_rate_base2006 = 2160**

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Oct-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Sep-2017</td>
</tr>
</tbody>
</table>

#### Base Optimization Flags (Continued)

C++ benchmarks:
- `-xCORE-AVX512`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`  
- `-auto-p32`  
- `-qopt-mem-layout-trans=3`

Fortran benchmarks:
- `-xCORE-AVX512`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-qopt-prefetch`

Benchmarks using both Fortran and C:
- `-xCORE-AVX512`  
- `-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:

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

---

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 26 December 2017.