**Fujitsu**

**PRIMEQUEST 3800B, Intel Xeon Platinum 8164, 2.00GHz**

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

**CPU Name:** Intel Xeon Platinum 8164  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz  
**CPU MHz:** 2000  
**FPU:** Integrated  
**CPU(s) enabled:** 208 cores, 8 chips, 26 cores/chip, 2 threads/core  
**CPU(s) orderable:** 2,4,6,8 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:** 35.75 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  

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 12 SP2 4.4.21-69-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>tmpfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>

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**SPECint®_rate2006 = Not Run**  
**SPECint_rate_base2006 = 9450**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td>415</td>
<td>6000</td>
</tr>
<tr>
<td>bzip2</td>
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<td>4330</td>
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<tr>
<td>gcc</td>
<td>415</td>
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<td>mcf</td>
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<td>12300</td>
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<td>gobmk</td>
<td>415</td>
<td>6030</td>
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<td>hmmer</td>
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<td>libquantum</td>
<td>415</td>
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<tr>
<td>h264ref</td>
<td>415</td>
<td>10900</td>
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<tr>
<td>omnetpp</td>
<td>415</td>
<td>4770</td>
</tr>
<tr>
<td>astar</td>
<td>415</td>
<td>4980</td>
</tr>
<tr>
<td>xalancbmk</td>
<td>415</td>
<td>9740</td>
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
<tr>
<td></td>
<td>Base</td>
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<td>Peak</td>
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<td>400.perlbench</td>
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<tr>
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<td>471.omnetpp</td>
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<td>545</td>
<td>4760</td>
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<tr>
<td>473.astar</td>
<td>415</td>
<td>585</td>
<td>4980</td>
<td>585</td>
<td>4980</td>
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<tr>
<td>483.xalancbmk</td>
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<td>297</td>
<td>9660</td>
<td>294</td>
<td>9740</td>
<td>294</td>
<td>9740</td>
<td></td>
<td></td>
</tr>
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</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"
Set Kernel Boot Parameter : nohz_full=1-415 isolcpus=1-415
Set CPU frequency governor to maximum performance with:
cupower -c 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:
echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns
echo 15000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
echo 1 > /proc/sys/kernel/numa_balancing
echo always > /sys/kernel/mm/transparent_hugepage/enabled
cpu idle state set with:
cupower idle-set -d 2
cupower idle-set -d 3
set affinity of rcu threads to the cpu0:
for i in `pgrep rcu` ; do taskset -pc 0 $i ; done
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SPEC CINT2006 Result

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 9450

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

Test date: Nov-2017
Hardware Availability: Jul-2017
Software Availability: Sep-2017

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)
routing on linu-x-k55j Sat Nov 18 03:54:08 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 8164 CPU @ 2.00GHz
  8 "physical id"s (chips)
  416 "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 : 26
siblings : 52
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 4: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 5: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 6: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
physical 7: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
  26 27 28 29
cache size : 36608 KB

From /proc/meminfo

MemTotal: 1583801256 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

SuSE-release: SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12

Continued on next page
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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:
    (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 18 03:26

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:
    46x Hynix HMA42GR7BJR4N-VK 16 GB 2 rank 2666 MHz
    50x 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
    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>
**SPEC CINT2006 Result**

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**Base Compiler Invocation**

- **C benchmarks:**
  - `icc -m32 -L/opt/intel/compilers_and_libraries_2018.0.128/linux/compiler/lib/ia32`
- **C++ benchmarks:**
  - `icpc -m32 -L/opt/intel/compilers_and_libraries_2018.0.128/linux/compiler/lib/ia32`

**Base Portability Flags**

- **400.perlbench:** `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32`
- **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-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`
  - `-qopt-mem-layout-trans=3`
- **C++ benchmarks:**
  - `-xCORE-AVX512 -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:


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

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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