**Fujitsu**  
PRIMERGY BX2580 M2, Intel Xeon E5-2640 v4, 2.40 GHz

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

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<tr>
<th>SPECint_results</th>
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<tbody>
<tr>
<td>PRIMERGY BX2580 M2, Intel Xeon E5-2640 v4, 2.40 GHz</td>
<td>903</td>
<td>862</td>
</tr>
</tbody>
</table>

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**Hardware**

- **CPU Name:** Intel Xeon E5-2640 v4  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.40 GHz  
- **CPU MHz:** 2400  
- **FPU:** Integrated  
- **CPU(s) enabled:** 20 cores, 2 chips, 10 cores/chip, 2 threads/core  
- **CPU(s) orderable:** 1,2 chip  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 256 KB I+D on chip per core  
- **L3 Cache:** 25 MB I+D on chip per chip  
- **Other Cache:** None  
- **Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)  
- **Disk Subsystem:** 1 x SATA, 1000 GB, 7200 RPM  
- **Other Hardware:** None

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**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 SP1 (x86_64)  
  Kernel 3.12.49-11-default  
- **Compiler:** C/C++: Version 16.0.0.101 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 V10.2
Fujitsu

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>268</td>
<td>1030</td>
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</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"

Platform Notes

BIOS configuration:
Energy Performance = Performance
Utilization Profile = Unbalanced
QPI snoop mode: Home Directory Snoop with OSB
COD Enable = Disabled, Early Snoop = Disabled, Home Snoop Dir OSB = Enabled
CPU C1E Support = Disabled
Sysinfo program /home/SPECcpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on linux-rzz5 Fri Jul 8 12:48:15 2016

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 E5-2640 v4 @ 2.40GHz
  2 "physical id"s (chips)

Continued on next page
SPEC CINT2006 Result

Fujitsu
PRIMERGY BX2580 M2, Intel Xeon E5-2640 v4, 2.40 GHz

SPECint_rate2006 = 903
SPECint_rate_base2006 = 862

Platform Notes (Continued)

40 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
care.)
    cpu cores : 10
    siblings : 20
    physical 0: cores 0 1 2 3 4 8 9 10 11 12
    physical 1: cores 0 1 2 3 4 8 9 10 11 12
    cache size : 25600 KB

From /proc/meminfo
    MemTotal: 264516260 kB
    HugePages_Total: 0
    Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
    SuSE-release:
        NAME="SLES"
        VERSION="12-SP1"
        VERSION_ID="12.1"
        PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
        ID="sles"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:12:sp1"

    uname -a:
        (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

    run-level 3 Jul 8 12:47 last=5

SPEC is set to: /home/SPECcpu2006
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sda3 xfs 331G 3.6G 327G 2% /home

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 SMI BIOS" standard.

BIOS FUJITSU // American Megatrends Inc. V5.0.0.11 R1.4.0 for D3321-B1x
Continued on next page
SPEC CINT2006 Result

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CPU2006 license: 19
Test sponsor: Fujitsu
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Platform Notes (Continued)

03/17/2016
Memory:
16x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/SPECcpu2006/libs/32:/home/SPECcpu2006/libs/64:/home/SPECcpu2006/sh"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1>   /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
For information about Fujitsu please visit: http://www.fujitsu.com

Base Compiler Invocation

C benchmarks:
cc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

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
### Fujitsu

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**CPU2006 license:** 19  
**Test sponsor:** Fujitsu  
**Hardware Availability:** Apr-2016  
**Test date:** Jul-2016  
**Tested by:** Fujitsu  
**Software Availability:** Sep-2015

### Base Optimization Flags

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

**C++ benchmarks:**
- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-opt-prefetch`  
- `-opt-mem-layout-trans=3`  
- `-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/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`
  - `400.perlbench`: `icc -m64`
  - `401.bzip2`: `icc -m64`
  - `456.hmmer`: `icc -m64`
  - `458.sjeng`: `icc -m64`

**C++ benchmarks:**
- `icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

### Peak Portability Flags

- `400.perlbench`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX_X64`
- `401.bzip2`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `403.gcc`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `429.mcf`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `445.gobmk`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `456.hmmer`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `458.sjeng`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `462.libquantum`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `464.h264ref`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `471.omnetpp`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
- `473.astar`: `-D_FILE_OFFSET_BITS=64`  
- `-DSPEC_CPU_LP64`  
- `-DSPEC_CPU_LINUX`
Fujitsu
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**Peak Portability Flags (Continued)**

- 483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

**Peak Optimization Flags**

### C benchmarks:

- 400.perlbmk: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
  - `ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
  - `par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32`

- 401.bzip2: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
  - `ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
  - `par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch`
  - `auto-ilp32 -ansi-alias`

- 403.gcc: `basepeak = yes`

- 429.mcf: `basepeak = yes`

- 445.gobmk: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
  - `prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias`
  - `opt-mem-layout-trans=3`

- 456.hmmer: `-xCORE-AVX2`  
  `-ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

- 458.sjeng: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
  - `ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
  - `par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4`
  - `auto-ilp32`

- 462.libquantum: `basepeak = yes`

- 464.h264ref: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
  - `ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
  - `par-num-threads=1(pass 1) -prof-use(pass 2) -unroll12`
  - `ansi-alias`

### C++ benchmarks:

- 471.omnetpp: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
  - `ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
  - `par-num-threads=1(pass 1) -prof-use(pass 2) -ansi-alias`
  - `opt-ra-region-strategy=block -Wl,-z,muldefs`
  - `-L/sh -lsmartheap`

- 473.astar: `basepeak = yes`

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Peak Optimization Flags (Continued)

483.xalancbmk: 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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevB.xml

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

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