# SPEC® CINT2006 Result
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## Fujitsu

PRIMERGY TX1310 M3, Intel Xeon E3-1245 v6, 3.7GHz

$SPECint®\_rate2006 =$ 273

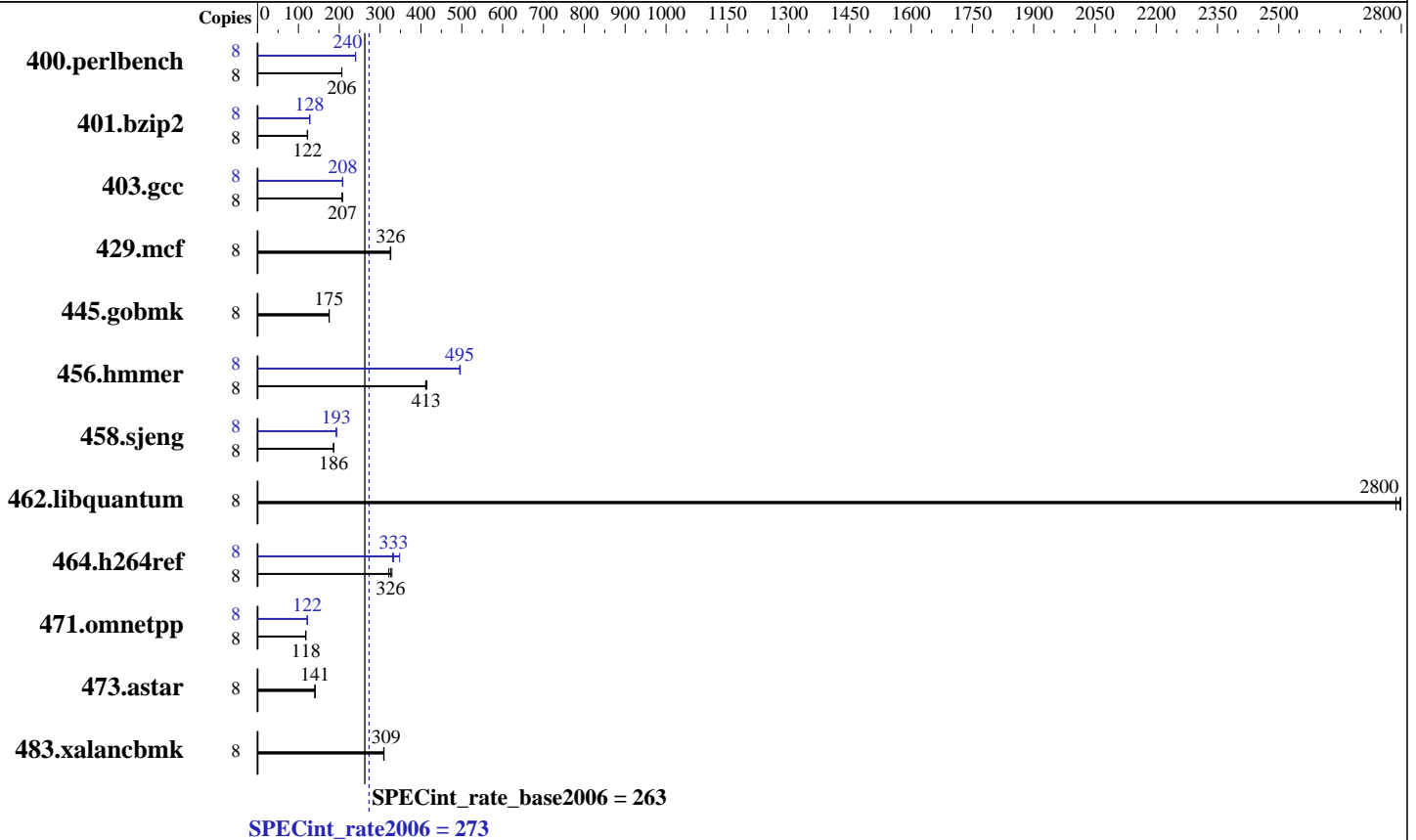$SPECint\_rate\_base2006 =$ 263

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

**Test date:** Mar-2017
**Hardware Availability:** Jun-2017
**Software Availability:** Nov-2016

**Copies**

| Benchmark | Copies | Base | Peak |
|---|---|---|---|
| 400.perlbench | 8 | 206 | 240 |
| 401.bzip2 | 8 | 122 | 128 |
| 403.gcc | 8 | 207 | 208 |
| 429.mcf | 8 | 326 | |
| 445.gobmk | 8 | 175 | |
| 456.hmmer | 8 | 413 | 495 |
| 458.sjeng | 8 | 186 | 193 |
| 462.libquantum | 8 | 2800 | |
| 464.h264ref | 8 | 326 | 333 |
| 471.omnetpp | 8 | 118 | 122 |
| 473.astar | 8 | 141 | |
| 483.xalancbmk | 8 | 309 | |

**SPECint_rate_base2006 = 263**

**SPECint_rate2006 = 273**

## Hardware

**CPU Name:** Intel Xeon E3-1245 v6
**CPU Characteristics:** Intel Turbo Boost Technology up to 4.10 GHz
**CPU MHz:** 3700
**FPU:** Integrated
**CPU(s) enabled:** 4 cores, 1 chip, 4 cores/chip, 2 threads/core
**CPU(s) orderable:** 1 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:** 8 MB I+D on chip per chip
**Other Cache:** None
**Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2400T-E)
**Disk Subsystem:** 1 x 2TB, SATA III, 7200 RPM
**Other Hardware:** None

## Software

**Operating System:** SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.21-68-default
**Compiler:** C/C++: Version 17.0.0.098 of Intel C/C++ Compiler 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

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## Results Table

| Benchmark | Base Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Peak Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 400.perlbench | 8 | 379 | 206 | **379** | **206** | 379 | 206 | 8 | **326** | **240** | 325 | 240 | 326 | 240 |
| 401.bzip2 | 8 | 634 | 122 | **633** | **122** | 630 | 123 | 8 | **605** | **128** | 607 | 127 | 603 | 128 |
| 403.gcc | 8 | 311 | 207 | 310 | 208 | **310** | **207** | 8 | 310 | 208 | **309** | **208** | 309 | 209 |
| 429.mcf | 8 | 225 | 325 | 224 | 326 | **224** | **326** | 8 | 225 | 325 | 224 | 326 | **224** | **326** |
| 445.gobmk | 8 | 478 | 175 | 480 | 175 | **479** | **175** | 8 | 478 | 175 | 480 | 175 | **479** | **175** |
| 456.hmmer | 8 | 180 | 415 | 181 | 411 | **181** | **413** | 8 | 151 | 495 | **151** | **495** | 150 | 496 |
| 458.sjeng | 8 | **520** | **186** | 520 | 186 | 519 | 186 | 8 | **502** | **193** | 502 | 193 | 501 | 193 |
| 462.libquantum | 8 | 59.2 | 2800 | **59.3** | **2800** | 59.5 | 2790 | 8 | 59.2 | 2800 | **59.3** | **2800** | 59.5 | 2790 |
| 464.h264ref | 8 | 551 | 321 | 538 | 329 | **544** | **326** | 8 | 509 | 348 | 535 | 331 | **532** | **333** |
| 471.omnetpp | 8 | 425 | 118 | 423 | 118 | **423** | **118** | 8 | **411** | **122** | 410 | 122 | 411 | 122 |
| 473.astar | 8 | 400 | 140 | 399 | 141 | **399** | **141** | 8 | 400 | 140 | 399 | 141 | **399** | **141** |
| 483.xalancbmk | 8 | 179 | 309 | **178** | **309** | 178 | 310 | 8 | 179 | 309 | **178** | **309** | 178 | 310 |

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"
    Turbo mode set with :
    cpupower -c all frequency-set -g performance
    cpupower idle-set -d 2
    cpupower idle-set -d 3
    cpupower idle-set -d 4
    echo always > /sys/kernel/mm/transparent_hugepage/enabled
    echo 1 >  /proc/sys/vm/drop_caches
    echo 1000000000 > /proc/sys/kernel/sched_min_granularity_ns
    echo 1500000000 > /proc/sys/kernel/sched_wakeup_granularity_ns

## Platform Notes

    Sysinfo program /home/benchmark/speccpu-20160922-updated/config/sysinfo.rev6993
    Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
    running on linux-hz4t Fri Mar  3 04:16:02 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

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## Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E3-1245 v6 @ 3.70GHz
      1 "physical id"s (chips)
      8 "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 0 1 2 3
   cache size : 8192 KB

From /proc/meminfo
   MemTotal:       65791292 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

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:
   Linux linux-hz4t 4.4.21-68-default #1 SMP Tue Oct 18 18:19:37 UTC 2016
   (63cf368) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 2 14:04

SPEC is set to: /home/benchmark/speccpu-20160922-updated
   Filesystem      Type    Size   Used Avail Use% Mounted on
   /dev/sda3       xfs    1.8T    16G  1.8T   1% /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 SMBIOS" standard.

   BIOS FUJITSU // American Megatrends Inc. V5.0.0.11 R0.93.0 for D3521-A1x
   02/23/2017
```

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## Platform Notes (Continued)

```
     Memory:
      4x Samsung M391A2K43BB1-CRC 16 GB 2 rank 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/benchmark/speccpu-20160922-updated/libs/32:/home/benchmark/speccpu-20160922-updated/libs/64:/home/benchmark/speccpu-20160922-updated/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
 runspec command invoked through numactl i.e.:
 numactl --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
        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

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# Base Optimization Flags (Continued)

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`

# Peak Compiler Invocation

C benchmarks (except as noted below):

`icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32`

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_2017/linux/lib/ia32`

# Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-D_FILE_OFFSET_BITS=64`
429.mcf: `-D_FILE_OFFSET_BITS=64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
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`

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# Peak Optimization Flags

C benchmarks:

400.perlbench: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX2`(pass 2)
`-par-num-threads=1`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2) `-auto-ilp32` `-qopt-mem-layout-trans=3`

401.bzip2: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX2`(pass 2)
`-par-num-threads=1`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2) `-qopt-prefetch` `-auto-ilp32`
`-qopt-mem-layout-trans=3`

403.gcc: `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div`
`-qopt-mem-layout-trans=3`

429.mcf: basepeak = yes

445.gobmk: basepeak = yes

456.hmmer: `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-unroll2` `-auto-ilp32`
`-qopt-mem-layout-trans=3`

458.sjeng: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX2`(pass 2)
`-par-num-threads=1`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2) `-unroll4` `-auto-ilp32`
`-qopt-mem-layout-trans=3`

462.libquantum: basepeak = yes

464.h264ref: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX2`(pass 2)
`-par-num-threads=1`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2) `-unroll2` `-qopt-mem-layout-trans=3`

C++ benchmarks:

471.omnetpp: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xCORE-AVX2`(pass 2)
`-par-num-threads=1`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
`-no-prec-div`(pass 2)
`-qopt-ra-region-strategy=block`
`-qopt-mem-layout-trans=3` `-Wl,-z,muldefs`
`-L/sh10.2` `-lsmartheap`

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

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# 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-ic17.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevE.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.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevE.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Tue Apr  4 16:57:14 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on  4 April 2017.