# SPEC® CINT2006 Result

**Fujitsu**

PRIMERGY CX2550 M2, Intel Xeon E5-2620 v4, 2.10 GHz

| SPECint®2006 | 59.7 |
|-----------------------------------------|
| SPECint_base2006 | 57.1 |

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

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## Hardware

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2620 v4</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.00 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2100</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x SATA, 1000 GB, 7200 RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

## Software

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>SUSE Linux Enterprise Server 12 SP1 (x86_64) Kernel 3.12.49-11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>

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Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
## Fujitsu PRIMERGY CX2550 M2, Intel Xeon E5-2620 v4, 2.10 GHz

| SPECint2006 = | 59.7 |
| SPECint_base2006 = | 57.1 |

**CPU2006 license:** 19  
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---

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>400.perlbench</td>
<td>275</td>
<td>35.6</td>
<td>275</td>
<td>35.5</td>
<td>275</td>
<td>35.5</td>
<td>253</td>
<td>38.7</td>
<td>252</td>
<td>38.7</td>
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<tr>
<td>401.bzip2</td>
<td>441</td>
<td>21.9</td>
<td>438</td>
<td>22.0</td>
<td>439</td>
<td>22.0</td>
<td>431</td>
<td>22.4</td>
<td>431</td>
<td>22.4</td>
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<tr>
<td>403.gcc</td>
<td>240</td>
<td>33.5</td>
<td>240</td>
<td>33.6</td>
<td>239</td>
<td>33.6</td>
<td>240</td>
<td>33.5</td>
<td>240</td>
<td>33.6</td>
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<tr>
<td>429.mcf</td>
<td>151</td>
<td>60.4</td>
<td>150</td>
<td>60.8</td>
<td>148</td>
<td>61.7</td>
<td>148</td>
<td>61.6</td>
<td>148</td>
<td>61.8</td>
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<tr>
<td>445.gobmk</td>
<td>406</td>
<td>25.8</td>
<td>406</td>
<td>25.8</td>
<td>406</td>
<td>25.8</td>
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<tr>
<td>456.hmmer</td>
<td>127</td>
<td>73.3</td>
<td>127</td>
<td>73.3</td>
<td>128</td>
<td>73.1</td>
<td>127</td>
<td>73.3</td>
<td>127</td>
<td>73.3</td>
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<tr>
<td>458.sjeng</td>
<td>405</td>
<td>29.9</td>
<td>405</td>
<td>29.9</td>
<td>404</td>
<td>29.9</td>
<td>400</td>
<td>30.3</td>
<td>400</td>
<td>30.3</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>5.09</td>
<td>4070</td>
<td>4.74</td>
<td>4370</td>
<td>4.75</td>
<td>4370</td>
<td>5.09</td>
<td>4070</td>
<td>4.74</td>
<td>4370</td>
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<tr>
<td>464.h264ref</td>
<td>449</td>
<td>49.3</td>
<td>448</td>
<td>49.4</td>
<td>448</td>
<td>49.4</td>
<td>449</td>
<td>49.3</td>
<td>448</td>
<td>49.4</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>215</td>
<td>29.0</td>
<td>216</td>
<td>28.9</td>
<td>217</td>
<td>28.8</td>
<td>156</td>
<td>40.2</td>
<td>156</td>
<td>40.2</td>
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<tr>
<td>473.astar</td>
<td>219</td>
<td>32.0</td>
<td>220</td>
<td>32.0</td>
<td>219</td>
<td>32.0</td>
<td>219</td>
<td>32.0</td>
<td>219</td>
<td>32.0</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>105</td>
<td>65.7</td>
<td>104</td>
<td>66.3</td>
<td>104</td>
<td>66.5</td>
<td>95.1</td>
<td>72.5</td>
<td>95.0</td>
<td>72.6</td>
</tr>
<tr>
<td><strong>Peak</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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### Submit Notes

The config file option 'submit' was used.

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### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

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### 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 $s e3fbb8667b5a285932ceab81e28219e1  
running on CX2550M2 Tue May 31 08:47:01 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 E5-2620 v4 @ 2.10GHz  
2 "physical id"s (chips)  
32 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The
Continued on next page
Fujitsu
PRIMERGY CX2550 M2, Intel Xeon E5-2620 v4, 2.10 GHz

SPECint2006 = 59.7
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CPU2006 license: 19
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Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
  cpu cores : 8
  siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
  MemTotal: 264321204 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:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 1
    # 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-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 May 31 08:44 last=5

SPEC is set to: /home/SPECcpu2006
  Filesystem  Type Size Used Avail Use% Mounted on
  /dev/sda3    xfs  890G 133G  757G 15% /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 R1.4.0 for D3343-B1x 03/17/2016
  Memory:

Continued on next page
### General Notes

Environment variables set by runspec before the start of the run:
- `KMP_AFFINITY = "granularity=fine,scatter"
- `LD_LIBRARY_PATH = "/home/SPECcpu2006/libs/32:/home/SPECcpu2006/libs/64:/home/SPECcpu2006/sh"
- `OMP_NUM_THREADS = "16"

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`
For information about Fujitsu please visit: http://www.fujitsu.com

### Base Compiler Invocation

| C benchmarks: | icc -m64 |
| C++ benchmarks: | icpc -m64 |

### Base Portability Flags

| 400.perlbench: | -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64 |
| 401.bzip2: | -DSPEC_CPU_LP64 |
| 403.gcc: | -DSPEC_CPU_LP64 |
| 429.mcf: | -DSPEC_CPU_LP64 |
| 445.gobmk: | -DSPEC_CPU_LP64 |
| 456.hmmer: | -DSPEC_CPU_LP64 |
| 458.sjeng: | -DSPEC_CPU_LP64 |
| 462.libquantum: | -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX |
| 464.h264ref: | -DSPEC_CPU_LP64 |
| 471.omnetpp: | -DSPEC_CPU_LP64 |
| 473.astar: | -DSPEC_CPU_LP64 |
| 483.xalancbmk: | -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX |

### Base Optimization Flags

| C benchmarks: | -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32 |

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**SPEC CINT2006 Result**

<table>
<thead>
<tr>
<th>Fujitsu</th>
<th>SPECint2006 = 59.7</th>
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<td>PRIMERGY CX2550 M2, Intel Xeon E5-2620 v4, 2.10 GHz</td>
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---

### Base Optimization Flags (Continued)

**C++ benchmarks:**
- `-xCORE-AVX2`  
- `-ipo`  
- `-O3`  
- `-no-prec-div`  
- `-opt-prefetch`  
- `-auto-p32`  
- `-Wl,-z,muldefs`  
- `-L/sh`  
- `-lsmartheap64`

---

### Base Other Flags

**C benchmarks:**

403.gcc: `-Dalloca=_alloca`

---

### Peak Compiler Invocation

**C benchmarks (except as noted below):**

```bash
icc -m64
```

400.perlbench: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

**C++ benchmarks (except as noted below):**

```bash
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

473.astar: `icpc -m64`

---

### Peak Portability Flags

400.perlbench: `-D_FILE_OFFSET_BITS=64`  
401.bzip2: `-DSPEC_CPU_LP64`  
403.gcc: `-DSPEC_CPU_LP64`  
429.mcf: `-DSPEC_CPU_LP64`  
445.gobmk: `-DSPEC_CPU_LP64`  
456.hmmer: `-DSPEC_CPU_LP64`  
458.sjeng: `-DSPEC_CPU_LP64`  
462.libquantum: `-DSPEC_CPU_LP64`  
464.h264ref: `-DSPEC_CPU_LP64`  
471.omnetpp: `-D_FILE_OFFSET_BITS=64`  
473.astar: `-DSPEC_CPU_LP64`  
483.xalancbmk: `-D_FILE_OFFSET_BITS=64`  

---

### Peak Optimization Flags

**C benchmarks:**

Continued on next page

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Peek Optimization Flags (Continued)

400.perlbenc: -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
-ansi-alias

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

403.gcc: basepeak = yes

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
-opt-prefetch -auto-p32

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

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

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

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)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca
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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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