## SPEC® CINT2006 Result

**Dell Inc.**

PowerEdge T440 (Intel Xeon Bronze 3106, 1.70 GHz)

**SPECint®2006 = 38.0**  
**SPECint_base2006 = 36.7**

| Software          | Operating System: SUSE Linux Enterprise Server 12 SP2 4.4.21-69-default  
|                   | Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux  
|                   | Auto Parallel: Yes  
|                   | File System: xfs  
|                   | System State: Run level 3 (multi-user)  
|                   | Base Pointers: 32/64-bit  
|                   | Peak Pointers: 32/64-bit  
|                   | Other Software: Microquill SmartHeap V10.2 |

| Hardware          | CPU Name: Intel Xeon Bronze 3106  
|                   | CPU Characteristics:  
|                   | CPU MHz: 1700  
|                   | FPU: Integrated  
|                   | CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip  
|                   | CPU(s) orderable: 1.2 chip  
|                   | Primary Cache: 32 KB I + 32 KB D on chip per core  
|                   | Secondary Cache: 1 MB I+D on chip per core  
|                   | L3 Cache: 11 MB I+D on chip per chip  
|                   | Other Cache: None  
|                   | Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2133 MT/s)  
|                   | Disk Subsystem: 1 x 1 TB SATA 7200 RPM  
|                   | Other Hardware: None  

<table>
<thead>
<tr>
<th>SPECint2006</th>
<th>SPECint_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.0</td>
<td>36.7</td>
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</table>

### Benchmark Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint2006</th>
<th>SPECint_base2006</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>22.0</td>
<td>22.0</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>13.8</td>
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<td>403.gcc</td>
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<td>445.gobmk</td>
<td>15.3</td>
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<td>456.hmmer</td>
<td>18.1</td>
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<td>458.sjeng</td>
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<td>471.omnetpp</td>
<td>18.4</td>
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<tr>
<td>473.astar</td>
<td>44.0</td>
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<tr>
<td>483.xalancbmk</td>
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Test date: Aug-2017  
Hardware Availability: Sep-2017  
Software Availability: Apr-2017
## Results Table

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<th>Base Seconds</th>
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<th>Ratio</th>
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<td>158</td>
<td>43.8</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 settings:
- Sub NUMA Cluster disabled
- Virtualization Technology disabled
- System Profile set to Custom
- CPU Performance set to Maximum Performance
- C States set to Autonomous
- C1E disabled
- Energy Efficient Turbo disabled
- Uncore Frequency set to Dynamic
- Energy Efficiency Policy set to Performance
- Memory Patrol Scrub disabled
- CPU Interconnect Bus Link Power Management disabled
- PCI ASPM L1 Link Power Management disabled

Sysinfo program /root/cpu2006-1.2_ic17u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-gfet Tue Aug 15 20:28:09 2017

Continued on next page
Dell Inc.  
PowerEdge T440 (Intel Xeon Bronze 3106, 1.70 GHz)

SPEC CINT2006 Result

SPECint2006 = 38.0
SPECint_base2006 = 36.7

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Aug-2017
Hardware Availability: Sep-2017
Software Availability: Apr-2017

Platform Notes (Continued)

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) Bronze 3106 CPU @ 1.70GHz
2 "physical id"s (chips)
16 "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 : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 11264 KB

From /proc/meminfo
MemTotal: 196552912 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
SuSE-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 Aug 14 23:29

SPEC is set to: /root/cpu2006-1.2_ic17u3
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 923G 9.2G 913G 1% /

Additional information from dmidecode:
Continued on next page
**SPEC CINT2006 Result**

**Dell Inc.**

PowerEdge T440 (Intel Xeon Bronze 3106, 1.70 GHz)

| SPECint2006 | 38.0 |
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**Platform Notes (Continued)**

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 Dell Inc. 1.0.0 08/10/2017
Memory:
- 12x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666 MHz, configured at 2133 MHz
- 4x Not Specified Not Specified

(End of data from sysinfo program)

---

**General Notes**

Environment variables set by runspec before the start of the run:
- `KMP_AFFINITY = "granularity=fine,scatter"
- `LD_LIBRARY_PATH = "/root/cpu2006-1.2_ic17u3/lib/ia32:/root/cpu2006-1.2_ic17u3/lib/intel64:/root/cpu2006-1.2_ic17u3/sh10.2"
- `OMP_NUM_THREADS = "16"

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 by default.
Filesystem page cache cleared with:
- `shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run`

---

**Base Compiler Invocation**

C benchmarks:
- `icc -m64`

C++ benchmarks:
- `icpc -m64`

---

**Base Portability Flags**

- 400.perlbmk: `-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`

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SPEC CINT2006 Result

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Base Portability Flags (Continued)
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 -qopt-prefetch
-auto-p32
C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64

Base Other Flags
C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation
C benchmarks (except as noted below):
icc -m64
400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
C++ benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
473.astar: icpc -m64

Peak Portability Flags
400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64

Continued on next page
**Dell Inc.**

PowerEdge T440 (Intel Xeon Bronze 3106, 1.70 GHz)

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
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<tbody>
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<td>Tested by:</td>
<td>Dell Inc.</td>
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</table>

**SPEC CINT2006 Result**

SPECint2006 = 38.0  
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**Peak Portability Flags (Continued)**

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<tbody>
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<td>456.hmmer</td>
<td>-DSPEC_CPU_LP64</td>
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<tr>
<td>458.sjeng</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX</td>
</tr>
<tr>
<td>464.h264ref</td>
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<tr>
<td>471.omnetpp</td>
<td>-D_FILE_OFFSET_BITS=64</td>
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<td>473.astar</td>
<td>-DSPEC_CPU_LP64</td>
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<tr>
<td>483.xalancbmk</td>
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**Peak Optimization Flags**

**C benchmarks:**

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<tr>
<th>Benchmark</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)</td>
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<tr>
<td></td>
<td>-no-prec-div(pass 2) -qopt-prefetch</td>
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<tr>
<td>401.bzip2</td>
<td>-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)</td>
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<tr>
<td></td>
<td>-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)</td>
</tr>
<tr>
<td></td>
<td>-no-prec-div -auto-ilp32 -qopt-prefetch</td>
</tr>
<tr>
<td>403.gcc</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc</td>
</tr>
<tr>
<td></td>
<td>-qopt-malloc-options=3 -auto-ilp32</td>
</tr>
<tr>
<td>429.mcf</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel</td>
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<tr>
<td></td>
<td>-qopt-prefetch -auto-p32</td>
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<td>445.gobmk</td>
<td>-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)</td>
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<td>-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)</td>
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<td>456.hmmer</td>
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<td>-no-prec-div(pass 2) -unroll4</td>
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<td>462.libquantum</td>
<td>basepeak = yes</td>
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<tr>
<td>464.h264ref</td>
<td>basepeak = yes</td>
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**C++ benchmarks:**

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<th>Benchmark</th>
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<td>-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)</td>
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<td>-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)</td>
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<td>-no-prec-div(pass 2) -qopt-ra-region-strategy=block</td>
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<tr>
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<td>-Wl,-z,muldefs -L/sh10.2 -lsmartheap</td>
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</tbody>
</table>

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CPU2006 license: 55
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Peak Optimization Flags (Continued)

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
          -auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
               -Wl,-z,muldefs -L/sh10.2 -lsmartheap

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-revF.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-revF.xml

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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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