SPEC® CINT2006 Result

Dell Inc.

PowerEdge R640 (Intel Xeon Gold 6148, 2.40 GHz)

SPECint®_rate2006 = Not Run

SPECint_rate_base2006 = 1950

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

Test date: Aug-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

CPU Name: Intel Xeon Gold 6148
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 40 cores, 2 chips, 20 cores/chip, 2 threads/core
CPU(s) orderable: 1 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: 27.5 MB I+D on chip per chip
Other Cache: None
Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 960 GB SATA SSD
Other Hardware: None

Hardware

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: 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
### Dell Inc. PowerEdge R640 (Intel Xeon Gold 6148, 2.40 GHz)

**SPECint_rate2006 = Not Run**

**SPECint_rate_base2006 = 1950**

- **CPU2006 license:** 55
- **Test sponsor:** Dell Inc.
- **Tested by:** Dell Inc.
- **Test date:** Aug-2017
- **Hardware Availability:** Jul-2017
- **Software Availability:** Nov-2016

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</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>400.perlbench</td>
<td>80</td>
<td>525</td>
<td>1490</td>
<td>526</td>
<td>1490</td>
<td>522</td>
<td>1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>80</td>
<td>884</td>
<td>874</td>
<td>891</td>
<td>867</td>
<td><strong>887</strong></td>
<td><strong>871</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td>80</td>
<td>455</td>
<td>454</td>
<td><strong>1420</strong></td>
<td>453</td>
<td>1420</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>80</td>
<td>282</td>
<td>2580</td>
<td>282</td>
<td>2580</td>
<td>282</td>
<td>2580</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>80</td>
<td>719</td>
<td>1170</td>
<td>718</td>
<td>1170</td>
<td>720</td>
<td>1170</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>80</td>
<td>271</td>
<td>271</td>
<td><strong>2760</strong></td>
<td>271</td>
<td>2750</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>80</td>
<td>779</td>
<td>1240</td>
<td>779</td>
<td>1240</td>
<td><strong>779</strong></td>
<td><strong>1240</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td>80</td>
<td>52.2</td>
<td>31800</td>
<td>52.0</td>
<td>31900</td>
<td><strong>52.0</strong></td>
<td><strong>31900</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>80</td>
<td>838</td>
<td>2110</td>
<td>848</td>
<td>2090</td>
<td><strong>842</strong></td>
<td><strong>2100</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>80</td>
<td>508</td>
<td>984</td>
<td><strong>508</strong></td>
<td>984</td>
<td>508</td>
<td>985</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>80</td>
<td>517</td>
<td>1090</td>
<td>515</td>
<td>1090</td>
<td><strong>515</strong></td>
<td><strong>1090</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>80</td>
<td>252</td>
<td>2190</td>
<td>252</td>
<td>2190</td>
<td><strong>252</strong></td>
<td><strong>2190</strong></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.

### 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 enabled
  - Virtualization Technology disabled
  - System Profile set to Custom
  - CPU Performance set to Maximum Performance
  - C States set to autonomous
  - C1E disabled
  - Uncore Frequency set to Dynamic
  - Energy Efficiency Policy set to Performance
  - Memory Patrol Scrub disabled
  - Logical Processor enabled
  - 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-bo7a Fri Aug 4 10:17:49 2017

Continued on next page
SPEC CINT2006 Result

Dell Inc. PowerEdge R640 (Intel Xeon Gold 6148, 2.40 GHz)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1950

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.
Test date: Aug-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

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) Gold 6148 CPU @ 2.40GHz
2 "physical id"s (chips)
80 "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 : 20
siblings : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 28160 KB

From /proc/meminfo
MemTotal: 394736736 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:
Linux linux-bo7a 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
(x86_64) x86_64 x86_64 GNU/Linux
run-level 3 Aug 4 10:15

SPEC is set to: /root/cpu2006-1.2_ic17u3
Additional information from dmidecode:
Continued on next page
SPEC CINT2006 Result

Dell Inc.
PowerEdge R640 (Intel Xeon Gold 6148, 2.40 GHz)  

SPECint_rate2006 =  Not Run  
SPECint_rate_base2006 = 1950

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

Test date: Aug-2017  
Hardware Availability: Jul-2017  
Software Availability: Nov-2016

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. 1.0.8 07/11/2017  
Memory: 24x 00AD00B300AD HMA82GR7AFR8N-VK 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 = "*/root/cpu2006-1.2_ic17u3/lib/ia32:/root/cpu2006-1.2_ic17u3/lib/intel64:/root/cpu2006-1.2_ic17u3/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 by default  
Filesystem page cache cleared with:  
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run  
runcspec 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

Continued on next page
### SPEC CINT2006 Result

**Dell Inc.**

PowerEdge R640 (Intel Xeon Gold 6148, 2.40 GHz)  

| SPECint_rate2006 | Not Run |  
| SPECint_rate_base2006 | 1950 |

**CPU2006 license:**  55  
**Test sponsor:**  Dell Inc.  
**Tested by:**  Dell Inc.  
**Test date:**  Aug-2017  
**Hardware Availability:**  Jul-2017  
**Software Availability:**  Nov-2016

### Base Portability Flags (Continued)

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:

---

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.  
Originally published on 22 August 2017.