## SPEC CINT2006 Result

**Dell Inc.**

### PowerEdge R740 (Intel Xeon Gold 6138, 2.00 GHz)

<table>
<thead>
<tr>
<th>SPECint Rate2006</th>
<th>Dell Inc.</th>
<th>Dell Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Base2006</td>
<td>Not Run</td>
<td>1760</td>
</tr>
</tbody>
</table>

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

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon Gold 6138</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.70 GHz</td>
</tr>
<tr>
<td>CPU MHZ:</td>
<td>2000</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>40 cores, 2 chips, 20 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>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>27.5 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 960 GB SATA SSD</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Red Hat Enterprise Linux Server release 7.3 (Maipo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</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-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>

### SPECint Test Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Rate2006</th>
<th>Base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td></td>
<td>1320</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>785</td>
<td>2900</td>
</tr>
<tr>
<td>403.gcc</td>
<td>1280</td>
<td>1000</td>
</tr>
<tr>
<td>429.mcf</td>
<td>2410</td>
<td>2500</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>1030</td>
<td>4000</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>2450</td>
<td>5500</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>1110</td>
<td>7000</td>
</tr>
<tr>
<td>462.libquantum</td>
<td></td>
<td>2500</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>1840</td>
<td>8500</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>951</td>
<td>10000</td>
</tr>
<tr>
<td>473.astar</td>
<td>996</td>
<td>11500</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>2040</td>
<td>13000</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<th>Dell Inc.</th>
</tr>
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<td>Hardware</td>
<td>Dell Inc.</td>
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</tbody>
</table>
SPEC CINT2006 Result

Dell Inc.

PowerEdge R740 (Intel Xeon Gold 6138, 2.00 GHz)

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

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1760

Test date: Jun-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>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td></td>
<td></td>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Copies</td>
<td>Seconds</td>
<td>Ratio</td>
<td>Seconds</td>
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<td>Seconds</td>
<td>Ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>80</td>
<td>590</td>
<td>1330</td>
<td>591</td>
<td>1320</td>
<td>591</td>
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<tr>
<td>401.bzip2</td>
<td>80</td>
<td>982</td>
<td>786</td>
<td>990</td>
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<td><strong>983</strong></td>
<td><strong>785</strong></td>
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<tr>
<td>403.gcc</td>
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<td>2410</td>
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<td></td>
</tr>
<tr>
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<td>80</td>
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<td>2460</td>
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<td><strong>2450</strong></td>
<td>307</td>
<td>2430</td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>80</td>
<td><strong>874</strong></td>
<td><strong>1110</strong></td>
<td>875</td>
<td>1110</td>
<td>873</td>
<td>1110</td>
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<tr>
<td>462.libquantum</td>
<td>80</td>
<td>57.7</td>
<td>28700</td>
<td>57.9</td>
<td>28600</td>
<td><strong>57.9</strong></td>
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<td></td>
</tr>
<tr>
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<td><strong>1840</strong></td>
<td>963</td>
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<td>526</td>
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<td>2040</td>
<td><strong>271</strong></td>
<td><strong>2040</strong></td>
<td>270</td>
<td>2040</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 Li Link Power Management disabled
Sysinfo program /cpu2006-1.2_ic17u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Fri Jun  2 11:59:46 2017
Dell Inc.
PowerEdge R740 (Intel Xeon Gold 6138, 2.00 GHz)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1760

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 6138 CPU @ 2.00GHz
   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: 394870516 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.3 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.3"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:
   Linux localhost.localdomain 3.10.0-514.e17.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 2 11:56

SPEC is set to: /cpu2006-1.2_ic17u3
   Filesystem    Type    Size  Used Avail Use% Mounted on
   /dev/sda2    xfs     838G  7.4G  831G   1% /

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.
Dell Inc.
PowerEdge R740 (Intel Xeon Gold 6138, 2.00 GHz)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1760

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

Platform Notes (Continued)

BIOS Dell Inc. 1.0.0 05/16/2017
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 = "'/cpu2006-1.2.ic17u3/lib/ia32:/cpu2006-1.2.ic17u3/lib/intel64:/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
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
Dell Inc.

PowerEdge R740 (Intel Xeon Gold 6138, 2.00 GHz)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1760

CPU2006 license: 55
Test date: Jun-2017
Test sponsor: Dell Inc.
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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 -lsmarthheap

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
http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revB.xml

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

Tested with SPEC CPU2006 v1.2.