SPEC® CINT2006 Result

Dell Inc.

PowerEdge C6420 (Intel Xeon Gold 5122, 3.60 GHz)

| SPECint®2006 | 69.1 |
| SPECint_base2006 | 65.9 |

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

Test date: Feb-2017
Hardware Availability: Jul-2017
Software Availability: Jul-2017

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint_base2006 = 65.9</th>
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<tr>
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<td>61.0</td>
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<tr>
<td>473.astar</td>
<td>25.6</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>25.3</td>
</tr>
</tbody>
</table>

Software

Operating System: SUSE Linux Enterprise Server 12 SP2
Compiler: C/C++: Version 17.0.1.132 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 Gold 5122
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 3600
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core
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: 16.5 MB I+D on chip per chip
Other Cache: None
Memory: 384 GB (12 x 32 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 960 GB SATA SSD
Other Hardware: None
Dell Inc. (Intel Xeon Gold 5122, 3.60 GHz)

SPECint2006 = 69.1
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Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>66.5</td>
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<td>66.6</td>
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<td>471.omnetpp</td>
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<td>82.4</td>
<td>83.8</td>
<td>82.5</td>
<td>83.6</td>
</tr>
</tbody>
</table>

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

Submit Notes

The config file option 'submit' was used.

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
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-mlw4 Wed Feb 15 11:06:08 2017

This section contains SUT (System Under Test) info as seen by
Continued on next page
**Platform Notes (Continued)**

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 5122 CPU @ 3.60GHz  
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  
cautions.)  
cpu cores : 4  
siblings : 8  
physical 0: cores 2 3 4 10  
physical 1: cores 1 5 9 13  
cache size : 16896 KB

From /proc/meminfo  
MemTotal:       394868184 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-mlw4 4.4.16-56-default #1 SMP Mon Aug 8 14:24:26 UTC 2016  
(5b281a8) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 15 11:05

SPEC is set to: /root/cpu2006-1.2  
Filesystem   Type Size Used Avail Use% Mounted on  
/dev/sda3    xfs  929G  31G  898G  4%  /

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  
Continued on next page
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Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Dell Inc. 0.4.1 02/07/2017
Memory:
4x 002C00B3002C 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666 MHz
8x 00AD063200AD HMA84GR7AF4N-VK 32 GB 2 rank 2666 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/lib/ia32:/root/cpu2006-1.2/lib/intel64:/root/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "8"

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.

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
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
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## Base Optimization Flags

- C benchmarks:
  - -xCORE-AVX512  -ipo  -O3  -no-prec-div  -parallel  -qopt-prefetch  
  - -auto-p32

- C++ benchmarks:
  - -xCORE-AVX512  -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
  - 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: -D_FILE_OFFSET_BITS=64
  - 473.astar: -DSPEC_CPU_LP64
  - 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-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch
401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div -auto-ilp32 -qopt-prefetch
403.gcc: basepeak = yes
429.mcf: -xCORE-AVX512 -ipo -O3 -no-prec-div -parallel
-qopt-prefetch -auto-p32
445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2)
456.hmmer: basepeak = yes
458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4
462.libquantum: basepeak = yes
464.h264ref: basepeak = yes

C++ benchmarks:
471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-ra-region-strategy=block
-Wl,-z,muldefs -L/sh10.2 -lsmartheap
473.astar: basepeak = yes
483.xalancbmk: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-Wl,-z,muldefs -L/sh10.2 -lsmartheap

Peak Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca
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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

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

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