Dell Inc.

PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)

SPECint®2006 = 65.8
SPECint_base2006 = 62.9

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

Test date: Sep-2017
Hardware Availability: Sep-2017
Software Availability: Nov-2016

CPU Name: Intel Xeon Gold 5118
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 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: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400 MT/s)
Disk Subsystem: 1 x 960 GB SATA SSD
Other Hardware: None

Software
Operating System: SUSE Linux Enterprise Server 12 SP3 (x86_64) 4.4.70-2-default
Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux
Auto Parallel: Yes
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2
### Dell Inc.

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#### Results Table

<table>
<thead>
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<th>Seconds</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>5700</td>
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<td>464.h264ref</td>
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<td><strong>33.7</strong></td>
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<td>33.6</td>
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<tr>
<td>483.xalancbmk</td>
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<td><strong>72.7</strong></td>
<td>95.0</td>
<td>72.6</td>
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<td>88.7</td>
<td>77.8</td>
<td>89.0</td>
<td>77.5</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.

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#### 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_ic17u3/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on linux-wds7 Mon Sep 4 23:44:50 2017

Continued on next page
Dell Inc.  
PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)  

**SPECint2006 = 65.8**  
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**Hardware Availability:** Sep-2017  
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**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 5118 CPU @ 2.30GHz  
- 2 "physical id"s (chips)  
- 48 "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 : 12  
  - siblings : 24  
  - physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13  
  - physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13  
- cache size : 16896 KB

From /proc/meminfo

- **MemTotal**: 196682072 kB  
- **HugePages_Total**: 0  
- **Hugepagesize**: 2048 kB

From /etc/*release* /etc/*version*

- **SuSE-release**:  
  - SUSE Linux Enterprise Server 12 (x86_64)  
  - VERSION = 12  
  - PATCHLEVEL = 3  
  - # 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-SP3"  
  - VERSION_ID="12.3"  
  - PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"  
  - ID="sles"  
  - ANSI_COLOR="0;32"  
  - CPE_NAME="cpe:/o:suse:sles:12:sp3"

**uname -a:**

- Linux linux-wds7 4.4.70-2-default #1 SMP Wed Jun 7 15:12:06 UTC 2017  
  - (4502c76) x86_64 x86_64 x86_64 GNU/Linux

- **run-level**: 3  
- **Sep 3 21:21**

**SPEC is set to:** /root/cpu2006-1.2_ic17u3  
**Files system**  
- **Type**: btrfs  
- **Size**: 855G  
- **Used**: 7.0G  
- **Avail**: 847G  
- **Mounted on**: /  

**Additional information from dmidecode:**

- Warning: Use caution when you interpret this section. The 'dmidecode' program Continued on next page
Platform Notes (Continued)

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:
  6x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666 MHz, configured at 2400
  MHz
  6x 00AD063200AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666 MHz, configured at 2400
  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 = "24"

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.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

Continued on next page
### Dell Inc.

**PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)**

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- **SPECint_base2006 =** 62.9

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</tr>
</tbody>
</table>

#### 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

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.
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CPU2006 license: 55
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Software Availability: Nov-2016

Peak Portability Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(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-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div -auto-ilp32 -qopt-prefetch

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
-qopt-malloc-options=3 -auto-ilp32

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

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(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-AVX2(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-AVX2(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

Continued on next page
**SPEC CINT2006 Result**

**Dell Inc.**

**PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)**

| SPECint2006 = | 65.8 |
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**Peak Optimization Flags (Continued)**

473.astar: basepeak = yes

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 other inquiries, please contact webmaster@spec.org.

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