**Dell Inc.**

PowerEdge R940 (Intel Xeon Gold 6144, 3.50 GHz)

**SPECint®2006 = 87.3**  
**SPECint_base2006 = 83.3**

<table>
<thead>
<tr>
<th>SPECint2006</th>
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<tbody>
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<td>87.3</td>
<td>83.3</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon Gold 6144  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 4.20 GHz  
- **CPU MHz:** 3500  
- **CPU(s) enabled:** 32 cores, 4 chips, 8 cores/chip  
- **FPU:** Integrated  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 1 MB I+D on chip per core  
- **L3 Cache:** 24.75 MB I+D on chip per core  
- **Memory:** 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)  
- **Disk Subsystem:** 1 x 900 GB 15K RPM SAS12  
- **Other Cache:** None

**Software**

- **Operating System:** SUSE Linux Enterprise Server 12 (x86_64) SP2  
  4.4.21-69-default  
- **Compiler:** C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux  
  Yes  
- **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
Dell Inc.

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CPU2006 license: 55
Test date: Oct-2017
Test sponsor: Dell Inc.
Hardware Availability: Jul-2017
Tested by: Dell Inc.
Software Availability: Apr-2017

Results Table

<table>
<thead>
<tr>
<th>Benchmark</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>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>188</td>
<td>52.1</td>
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<td>52.7</td>
<td>186</td>
<td>52.5</td>
<td>164</td>
<td>59.7</td>
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<td>59.8</td>
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<tr>
<td>401.bzip2</td>
<td>305</td>
<td>31.6</td>
<td>305</td>
<td>31.6</td>
<td>305</td>
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<td>47.1</td>
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<td>47.1</td>
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<td>47.6</td>
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<tr>
<td>429.mcf</td>
<td>108</td>
<td>84.3</td>
<td>109</td>
<td>83.4</td>
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<td>84.8</td>
<td>111</td>
<td>82.0</td>
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<td>83.4</td>
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<td>445.gobmk</td>
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<td>37.4</td>
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<td>37.3</td>
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<tr>
<td>456.hmmer</td>
<td>84.3</td>
<td>111</td>
<td>84.3</td>
<td>111</td>
<td>84.2</td>
<td>111</td>
<td>84.3</td>
<td>111</td>
<td>84.2</td>
<td>111</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>293</td>
<td>41.3</td>
<td>293</td>
<td>41.4</td>
<td>293</td>
<td>41.4</td>
<td>287</td>
<td>42.2</td>
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<td>462.libquantum</td>
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<td>2.48</td>
<td>8370</td>
<td>2.34</td>
<td>8840</td>
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<td>8380</td>
<td>2.48</td>
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<td>464.h264ref</td>
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<td>80.7</td>
<td>276</td>
<td>80.3</td>
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<td>80.7</td>
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<td>80.7</td>
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<td>80.3</td>
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<td>471.omnetpp</td>
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<td>169</td>
<td>37.0</td>
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<td>51.0</td>
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<tr>
<td>473.astar</td>
<td>160</td>
<td>43.9</td>
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<td>43.8</td>
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<td>44.0</td>
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<td>43.5</td>
<td>161</td>
<td>43.5</td>
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<tr>
<td>483.xalancbmk</td>
<td>76.2</td>
<td>90.5</td>
<td>76.7</td>
<td>89.9</td>
<td>77.0</td>
<td>89.6</td>
<td>68.1</td>
<td>101</td>
<td>68.8</td>
<td>100</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:
Logical Processor Disabled
Virtualization Technology Disabled
Sub NUMA Cluster Disabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C1E Disabled
C States set to Autonomous
Uncore Frequency set to Dynamic
Memory Patrol Scrub Disabled
Energy Efficiency Policy set to Performance
CPU Interconnect Bus Link Power Management Disabled
PCI ASPM L1 Link Power Management Disabled
Sysinfo program /home/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51edd28d7f98696cbe290c1)
running on linux-4qdv Tue Oct 10 02:49:27 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
Continued on next page

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Dell Inc.

PowerEdge R940 (Intel Xeon Gold 6144, 3.50 GHz)

**SPECint2006 =** 87.3
**SPECint_base2006 =** 83.3

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.
Test date: Oct-2017
Hardware Availability: Jul-2017
Software Availability: Apr-2017

**Platform Notes (Continued)**

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo

```plaintext
model name : Intel(R) Xeon(R) Gold 6144 CPU @ 3.50GHz
4 "physical id"s (chips)
32 "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 : 8
siblings : 8
physical 0: cores 0 2 3 9 16 19 26 27
physical 1: cores 0 2 3 9 16 19 26 27
physical 2: cores 0 2 3 9 16 19 26 27
physical 3: cores 0 2 3 9 16 19 26 27
cache size : 25344 KB
```

From /proc/meminfo

```plaintext
MemTotal:       791225344 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:
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:

(9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 10 02:49

SPEC is set to: /home/cpu2006

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 796G 17G 780G 3% /home
Additional information from dmidecode:

Continued on next page
Dell Inc.
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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. 1.1.7 08/10/2017
Memory:
3x 002C00B3002C 18ASF2G72PD2-2G6D1 16 GB 2 rank 2666 MHz
21x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666 MHz
24x 00CE063200CE M393A2K43BB1-CTD 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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"
OMP_NUM_THREADS = "32"

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
## SPEC CINT2006 Result

**Dell Inc.**

PowerEdge R940 (Intel Xeon Gold 6144, 3.50 GHz)

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

**Test date:** Oct-2017  
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**Software Availability:** Apr-2017

### Base Portability Flags (Continued)

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<tr>
<td>473.astar: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX</td>
</tr>
</tbody>
</table>

### 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):**

<table>
<thead>
<tr>
<th>Peak Compiler Invocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>icc -m64</td>
</tr>
<tr>
<td>400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32</td>
</tr>
<tr>
<td>445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32</td>
</tr>
</tbody>
</table>

**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

<table>
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<tr>
<td>400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32</td>
</tr>
<tr>
<td>401.bzip2: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>403.gcc: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>429.mcf: -DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>445.gobmk: -D_FILE_OFFSET_BITS=64</td>
</tr>
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Continued on next page
SPEC CINT2006 Result

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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

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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 other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.