Dell Inc.

PowerEdge FC640 (Intel Xeon Gold 5122, 3.60 GHz)

Dell Inc.

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

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

SPECint2006 = 73.5
SPECint_base2006 = 70.2

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: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2666 MT/s)
Disk Subsystem: 1 x 960 GB SATA SSD
Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.16-56-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

Operating System

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.16-56-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.
PowerEdge FC640 (Intel Xeon Gold 5122, 3.60 GHz)

<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>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>209</td>
<td>46.8</td>
<td>208</td>
<td>46.9</td>
<td>210</td>
<td>46.6</td>
<td>184</td>
<td>53.2</td>
<td>184</td>
<td>53.1</td>
<td>185</td>
<td>52.9</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>341</td>
<td>28.3</td>
<td>341</td>
<td>28.3</td>
<td>342</td>
<td>28.3</td>
<td>338</td>
<td>28.5</td>
<td>338</td>
<td>28.5</td>
<td>338</td>
<td>28.5</td>
</tr>
<tr>
<td>403.gcc</td>
<td>189</td>
<td>42.6</td>
<td>189</td>
<td>42.6</td>
<td>190</td>
<td>42.4</td>
<td>189</td>
<td>42.6</td>
<td>189</td>
<td>42.6</td>
<td>190</td>
<td>42.4</td>
</tr>
<tr>
<td>429.mcf</td>
<td>316</td>
<td>33.2</td>
<td>316</td>
<td>33.2</td>
<td>316</td>
<td>33.2</td>
<td>311</td>
<td>33.7</td>
<td>311</td>
<td>33.8</td>
<td>311</td>
<td>33.8</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>95.7</td>
<td>97.5</td>
<td>95.7</td>
<td>97.5</td>
<td>95.8</td>
<td>97.4</td>
<td>95.7</td>
<td>97.5</td>
<td>95.7</td>
<td>97.5</td>
<td>95.8</td>
<td>97.4</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>330</td>
<td>36.7</td>
<td>330</td>
<td>36.7</td>
<td>330</td>
<td>36.7</td>
<td>324</td>
<td>37.4</td>
<td>324</td>
<td>37.4</td>
<td>323</td>
<td>37.4</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>4.91</td>
<td>4220</td>
<td>4.91</td>
<td>4220</td>
<td>4.91</td>
<td>4220</td>
<td>4.91</td>
<td>4220</td>
<td>4.91</td>
<td>4220</td>
<td>4.91</td>
<td>4220</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>307</td>
<td>72.2</td>
<td>307</td>
<td>72.0</td>
<td>308</td>
<td>71.9</td>
<td>307</td>
<td>72.2</td>
<td>307</td>
<td>72.2</td>
<td>307</td>
<td>72.2</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>216</td>
<td>28.9</td>
<td>215</td>
<td>29.1</td>
<td>217</td>
<td>28.9</td>
<td>159</td>
<td>39.3</td>
<td>160</td>
<td>39.1</td>
<td>165</td>
<td>37.8</td>
</tr>
<tr>
<td>473.astar</td>
<td>183</td>
<td>38.4</td>
<td>183</td>
<td>38.4</td>
<td>182</td>
<td>38.5</td>
<td>183</td>
<td>38.4</td>
<td>182</td>
<td>38.5</td>
<td>183</td>
<td>38.4</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>84.5</td>
<td>81.6</td>
<td>84.7</td>
<td>81.4</td>
<td>84.8</td>
<td>81.4</td>
<td>78.1</td>
<td>88.4</td>
<td>77.7</td>
<td>88.4</td>
<td>77.8</td>
<td>88.0</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 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-u8yg Fri Sep 8 00:37:24 2017
**SPEC CINT2006 Result**

**Dell Inc.**

**PowerEdge FC640 (Intel Xeon Gold 5122, 3.60 GHz)**

| SPECint2006 = | 73.5 |
| SPECint_base2006 = | 70.2 |

**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Sep-2017  
**Hardware Availability:** Sep-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`

```plaintext
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 caution.)
cpu cores : 4
siblings : 8
physical 0: cores 1 5 9 13
physical 1: cores 1 5 9 13
cache size : 16896 KB
```

From `/proc/meminfo`

```plaintext
MemTotal:       196687636 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

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

SUSE-release:

```plaintext
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:

```plaintext
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"
```

```plaintext
uname -a:
Linux linux-u8yg 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 Sep 8 00:36
```

SPEC is set to: `/root/cpu2006-1.2_ic17u3`

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:  
3x 002C00B3002C 18ASF2G72PD2-2G6D1 16 GB 2 rank 2666 MHz  
9x 00AD00B300AD HMA82GR7AF8N-VK 16 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_ic17u3/lib/ia32:/root/cpu2006-1.2_ic17u3/lib/intel64:/root/cpu2006-1.2_ic17u3/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.  
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 -DSPEC_CPU_LINUX`
- **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`
- **471.omnetpp:**  
  - `-DSPEC_CPU_LP64`
- **473.astar:**  
  - `-DSPEC_CPU_LP64`

Continued on next page
**Dell Inc.**  
PowerEdge FC640 (Intel Xeon Gold 5122, 3.60 GHz)  

| SPECint2006 | 73.5 |
| SPECint_base2006 | 70.2 |

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

### Base Portability Flags (Continued)

- 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
  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

Continued on next page
Dell Inc.

PowerEdge FC640 (Intel Xeon Gold 5122, 3.60 GHz)

**SPEC CINT2006 Result**

| SPECint2006 = | 73.5 |
| SPECint_base2006 = | 70.2 |

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

### Peak Portability Flags (Continued)

- `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-ipl32 -qopt-prefetch
- `403.gcc`: `basepeak = yes`
- `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`
- `473.astar`: `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
  -auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64`
SPEC CINT2006 Result

Dell Inc.
PowerEdge FC640 (Intel Xeon Gold 5122, 3.60 GHz)  SPECint2006 =  73.5
SPECint_base2006 =  70.2

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

Peak Optimization Flags (Continued)
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

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 3 October 2017.