## SPEC® CINT2006 Result

### Hewlett-Packard Company

ProLiant DL580 Gen9  
(3.20 GHz, Intel Xeon E7-8893 v3)

<table>
<thead>
<tr>
<th>SPECint®_rate2006</th>
<th>893</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>849</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3  
**Test date:** May-2015  
**Test sponsor:** Hewlett-Packard Company  
**Hardware Availability:** May-2015  
**Tested by:** Hewlett-Packard Company  
**Software Availability:** Oct-2014

### Hardware

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon E7-8893 v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.50 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>3200</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 4 chips, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>2,4 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>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>45 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 400 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

| Operating System | SUSE Linux Enterprise Server 12 (x86_64)  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kernel</td>
<td>3.12.28-4-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 15.0.0.090 of Intel C++ Studio XE 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 V10.0</td>
</tr>
</tbody>
</table>

### Test Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint_rate2006</th>
</tr>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>893</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>893</td>
</tr>
<tr>
<td>403.gcc</td>
<td>893</td>
</tr>
<tr>
<td>429.mcf</td>
<td>893</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>893</td>
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<tr>
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<td>893</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>893</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>893</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>893</td>
</tr>
<tr>
<td>473.astar</td>
<td>893</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>893</td>
</tr>
</tbody>
</table>

**SPECint_rate_base2006 = 849**
Hewlett-Packard Company
ProLiant DL580 Gen9
(3.20 GHz, Intel Xeon E7-8893 v3)

SPEC CINT2006 Result

SPECint_rate2006 = 893
SPECint_rate_base2006 = 849

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

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>
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<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
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<td>417</td>
<td>750</td>
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<td>669</td>
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<td>673</td>
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<td>429.mcf</td>
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<td>263</td>
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<td>1110</td>
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<td>445.gobmk</td>
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<tr>
<td>462.libquantum</td>
<td>32</td>
<td>74.9</td>
<td>8850</td>
<td>74.9</td>
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<td>75.1</td>
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<tr>
<td>464.h264ref</td>
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<tr>
<td>471.omnetpp</td>
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<tr>
<td>483.xalancbmk</td>
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<td>1030</td>
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<td>215</td>
<td>1030</td>
<td>215</td>
<td>1030</td>
<td>214</td>
<td>1030</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"
Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
  echo 1 >       /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Platform Notes

BIOS Configuration
  Power Profile set to Custom
  Power Regulator set to Static High Performance Mode
  Minimum Processor Idle Power Core C-State set to C6 State
  Minimum Processor Idle Power Package C-State set to No Package State
  Energy/Performance Bias set to Maximum Performance
  Collaborative Power Control set to Enabled
  Thermal Configuration set to Maximum Cooling
  Processor Power and Utilization Monitoring set to Disabled
  Memory Refresh Rate set to 1x Refresh

Continued on next page
Hewlett-Packard Company
ProLiant DL580 Gen9
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SPECint_rate2006 = 893
SPECint_rate_base2006 = 849

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
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Specint Program

Continued on next page
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Platform Notes (Continued)

run-level 3 May 8 21:21

SPEC is set to: /home/cpu2006

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 331G 14G 317G 5% /home

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.

BIOS HP U17 03/13/2015
Memory:
11x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz
64x UNKNOWN NOT AVAILABLE
21x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 1600 MHz

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 512 GB and the dmidecode description should have two lines reading as:
11x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz
21x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 1600 MHz

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0

Base Compiler Invocation

C benchmarks:
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX
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Software Availability: Oct-2014

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3 -W1,-z,muldefs -L/sh -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX


## Peak Optimization Flags

### C benchmarks:

- **400.perlbench**: `-xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
  -O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
  -auto-ilp32`

- **401.bzip2**: `-xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
  -O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
  -opt-prefetch -auto-ilp32 -ansi-alias`

- **403.gcc**: `basepeak = yes`

- **429.mcf**: `basepeak = yes`

- **445.gobmk**: `-xCORE-AVX2 (pass 2) -prof-gen (pass 1) -prof-use (pass 2)
  -ansi-alias -opt-mem-layout-trans=3`

- **456.hmmer**: `-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

- **458.sjeng**: `-xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
  -O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
  -unroll4 -auto-ilp32`

- **462.libquantum**: `basepeak = yes`

- **464.h264ref**: `-xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
  -O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
  -unroll2 -ansi-alias`

### C++ benchmarks:

- **471.omnetpp**: `-xCORE-AVX2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
  -O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
  -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/sh -lsmartheap`

- **473.astar**: `basepeak = yes`

- **483.xalancbmk**: `basepeak = yes`

## Peak Other Flags

### C benchmarks:

- **403.gcc**: `-Dalloca=_alloca`
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SPECint\textsubscript{rate\_base2006} = 849

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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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