Hewlett-Packard Company

ProLiant DL360 Gen9
(2.30 GHz, Intel Xeon E5-2650 v3)

**SPECint®_rate2006 = 855**
**SPECint_rate_base2006 = 821**

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<th>Nov-2014</th>
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<tr>
<td>Hardware Availability:</td>
<td>Sep-2014</td>
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<tr>
<td>Software Availability:</td>
<td>Sep-2014</td>
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### CPU2006 license
3

### Tested by
Hewlett-Packard Company

### Test sponsor
Hewlett-Packard Company

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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<tbody>
<tr>
<td>CPU Name:</td>
<td>Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>CPU MHZ:</td>
<td>Auto Parallel: No</td>
</tr>
<tr>
<td>FPU:</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>Base Pointers: 32-bit</td>
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<tr>
<td>Primary Cache:</td>
<td>Peak Pointers: 32/64-bit</td>
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<tr>
<td>Secondary Cache:</td>
<td>Other Software: Microquill SmartHeap V10.0</td>
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<tr>
<td>L3 Cache:</td>
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<tr>
<td>Other Cache:</td>
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<td>Memory:</td>
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<td>Disk Subsystem:</td>
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| SPECint_rate_base2006 = 821 |

| SPECint_rate2006 = 855 |

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<tr>
<td>400.perlbench</td>
<td>401.bzip2</td>
</tr>
<tr>
<td>403.gcc</td>
<td>429.mcf</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>456.hmmer</td>
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<tr>
<td>458.sjeng</td>
<td>462.libquantum</td>
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<td>464.h264ref</td>
<td>471.omnetpp</td>
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<td>471.omnetpp</td>
<td>473.astar</td>
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<tr>
<td>483.xalancbmk</td>
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</table>

**CINT2006 Result**

Copyright 2006-2014 Standard Performance Evaluation Corporation
## Results Table

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<td>913</td>
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<td>303</td>
<td>911</td>
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</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:

- HP Power Profile set to Maximum Performance
- HP Power Regulator to HP Static High Performance Mode
- Minimum Processor Idle Power Core State set to Package C6 State
- Minimum Processor Idle Power Package C-State set to No Package State
- QPI Snoop Configuration set to Cluster on Die
- Thermal Configuration set to Maximum Cooling
- Collaborative Power Control set to Disabled
- Pecessor Power and Utilization Monitoring set to Disabled
- Energy/Performance Bias set to Maximum Performance
- Memory Refresh Rate set to 1x Refresh

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Hewlett-Packard Company
ProLiant DL360 Gen9
(2.30 GHz, Intel Xeon E5-2650 v3)

SPECint_rate2006 = 855
SPECint_rate_base2006 = 821

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

Platform Notes (Continued)

Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on Pilot-DL360-G9 Fri Nov 14 07:36:10 2014

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) CPU E5-2650 v3 @ 2.30GHz
  2 "physical id"s (chips)
  40 "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 : 5
  siblings : 10
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  physical 1: cores 0 1 2 3 4 8 9 10 11 12
  cache size : 12800 KB

From /proc/meminfo
  MemTotal: 263843532 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux Server"
    VERSION="7.0 (Maipo)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="7.0"
    PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
    ANSI_COLOR="0;31"
    CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
  redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
  system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
  system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
  Linux Pilot-DL360-G9 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014
  x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 14 07:29

SPEC is set to: /home/cpu2006
Filesystem          Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel_pilot--dl360--g9--home  xfs  318G  144G  175G  46%  /home

Additional information from dmidecode:
**SPEC CINT2006 Result**

**Hewlett-Packard Company**

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| Test date: | Nov-2014 |
| Hardware Availability: | Sep-2014 |
| Software Availability: | Sep-2014 |

**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 HP P89 07/11/2014  
Memory:  
16x HP NOT AVAILABLE 16 GB 2 rank 2133 MHz  
8x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 256 GB and the dmidecode description should have one line reading as:  
16x HP NOT AVAILABLE 16 GB 2 rank 2133 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:  
```bash  
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32  
```

C++ benchmarks:  
```bash  
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`

**Base Optimization Flags**

C benchmarks:  
```bash  
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
```

C++ benchmarks:  
```bash  
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs  
-L/sh -lsmartheap  
```
SPEC CINT2006 Result

Hewlett-Packard Company
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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

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Hewlett-Packard Company
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<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
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CPU2006 license: 3
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Tested by: Hewlett-Packard Company

Peak Optimization Flags (Continued)

429.mcf: basepeak = yes
445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias
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)
-unroll4 -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

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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Hewlett-Packard Company
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For other inquiries, please contact webmaster@spec.org.

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