## SPEC® CFP2006 Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen9  
(3.40 GHz, Intel Xeon E5-2643 v4)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>121</th>
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<tbody>
<tr>
<td>SPECfp_base2006</td>
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### Hardware

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### Software

<table>
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<tr>
<th>Operating System</th>
<th>Red Hat Enterprise Linux Server release 7.2, (Maipo)</th>
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<tbody>
<tr>
<td>Compiler</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux</td>
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<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
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</table>

| Test date: | Apr-2016 |
| Hardware Availability: | Mar-2016 |
| Software Availability: | Nov-2015 |

### CPU2006 license: 3

- Test sponsor: HPE
- Tested by: HPE

### CPU Name:

Intel Xeon E5-2643 v4

### CPU Characteristics:

- Intel Turbo Boost Technology up to 3.70 GHz

### CPU MHz:

3400

### FPU:

Integrated

### CPU(s) enabled:

12 cores, 2 chips, 6 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:

256 KB I+D on chip per core

### Operating System:

Red Hat Enterprise Linux Server release 7.2, (Maipo)

### Compiler:

C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux

### File System:

xfs

### Auto Parallel:

Yes

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### Results Table

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

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### 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
```

### Platform Notes

- **BIOS Configuration:**
  - HP Power Profile set to Custom
  - HP Power Regulator to HP Static High Performance Mode
- Minimum Processor Idle Power Core C-State set to C1E State
- Minimum Processor Idle Power Package C-State set to No Package State
- QPI Snoop Configuration set to Home Snoop
- Collaborative Power Control set to Disabled
- Thermal Configuration set to Maximum Cooling

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SPEC CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen9
(3.40 GHz, Intel Xeon E5-2643 v4)

SPECfp2006 = 121
SPECfp_base2006 = 117

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

Platform Notes (Continued)

Processor Power and Utilization Monitoring set to Disabled
Memory Refresh Rate set to 1x Refresh

Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on DL380Gen9allbin Sat Apr 30 21:11:49 2016

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 E5-2643 v4 @ 3.40GHz
  2 "physical id"s (chips)
  24 "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 : 6
siblings : 12
physical 0: cores 0 1 2 3 6 7
physical 1: cores 0 1 2 3 6 7
cache size : 20480 KB

From /proc/meminfo
MemTotal: 528067692 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.2 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="7.2"
  PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"

redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

uname -a:
Linux DL380Gen9allbin 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29 EDT
2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 30 21:08

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda5 xfs 318G 155G 163G 49% /home

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Platform Notes (Continued)
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 P89 03/23/2016
Memory:
8x UNKNOWN NOT AVAILABLE
16x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2400 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 one line reading as:
16x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2400 MHz

General Notes
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
OMP_NUM_THREADS = "12"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

Binaries compiled on a system with 1x Intel Xeon E5-2660 v4 CPU + 128GB memory using RedHat EL 7.2

Base Compiler Invocation
C benchmarks:
  icc  -m64
C++ benchmarks:
  icpc  -m64
Fortran benchmarks:
  ifort  -m64
Benchmarks using both Fortran and C:
  icc  -m64 ifort  -m64

Base Portability Flags
410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64

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Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen9
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CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

Base Portability Flags (Continued)

<table>
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<tr>
<th>Benchmark</th>
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<tbody>
<tr>
<td>434.zeusmp</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
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<tr>
<td>435.gromacs</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
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<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>481.wrf</td>
<td>-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
</tbody>
</table>

Base Optimization Flags

C benchmarks:
- xCORE-AVX2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
- ansi-alias -fp-model fast=2
- qopt-prefetch-issue-excl-hint

C++ benchmarks:
- xCORE-AVX2 -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
  - fp-model fast=2
  - qopt-prefetch-issue-excl-hint

Fortran benchmarks:
- xCORE-AVX2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
  - fp-model fast=2
  - qopt-prefetch-issue-excl-hint

Benchmarks using both Fortran and C:
- xCORE-AVX2 -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
  - ansi-alias -fp-model fast=2
  - qopt-prefetch-issue-excl-hint

Peak Compiler Invocation

C benchmarks:
  icc  -m64

C++ benchmarks:
icpc  -m64
Peak Compiler Invocation (Continued)

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc  -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

  433.milc: basepeak = yes
  470.lbm: basepeak = yes
  482.sphinx3: basepeak = yes

C++ benchmarks:

  444.namd: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
             -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
             -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
             -auto-ilp32

  447.dealII: basepeak = yes
  450.soplex: basepeak = yes

  453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
              -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
              -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
              -ansi-alias

Fortran benchmarks:

  410.bwaves: basepeak = yes
  416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
              -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
              -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
              -inline-level=0 -scalar-rep-

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**SPEC CFP2006 Result**

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ProLiant DL380 Gen9  
(3.40 GHz, Intel Xeon E5-2643 v4)  

**SPECfp2006 =** 121  
**SPECfp_base2006 =** 117

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**CPU2006 license:** 3  
**Test date:** Apr-2016  
**Test sponsor:** HPE  
**Hardware Availability:** Mar-2016

**Tested by:** HPE  
**Software Availability:** Nov-2015

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**Peak Optimization Flags (Continued)**

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc  
-opt-malloc-options=3 -auto -unroll4

**Benchmarks using both Fortran and C:**

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

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The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

http://www.spec.org/cpu2006/flags/HP-Compiler-Flags-Intel-V1.2-BDW-revE.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml

http://www.spec.org/cpu2006/flags/HP-Compiler-Flags-Intel-V1.2-BDW-revE.xml

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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.


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