Hewlett-Packard Company
ProLiant DL580 Gen8
(2.30 GHz, Intel Xeon E7-4850 v2)

SPECfp®2006 = 88.6
SPECfp_base2006 = 83.8

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

CPU Name: Intel Xeon E7-4850 v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 48 cores, 4 chips, 12 cores/chip
CPU(s) orderable: 2, 4 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core

Operating System: SUSE Linux Enterprise Server 11 (x86_64) SP3
Kernel 3.0.76-0.11-default
Compiler: C/C++: Version 14.0.0.080 of Intel C++
Studio XE for Linux;
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext3
System State: Run level 3 (multi-user)

Hardware

Software

SPECfp_base2006 = 83.8
SPECfp2006 = 88.6

Continued on next page

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

**SPEC CFP2006 Result**

**Hewlett-Packard Company**

ProLiant DL580 Gen8

(2.30 GHz, Intel Xeon E7-4850 v2)

**SPECfp2006 =** 88.6

**SPECfp_base2006 =** 83.8

**CPU2006 license:** 3

**Test sponsor:** Hewlett-Packard Company

**Tested by:** Hewlett-Packard Company

**Test date:** May-2014

**Hardware Availability:** Feb-2014

**Software Availability:** Sep-2013

### Results Table

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<th>Ratio</th>
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</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
```

Filesystem page cache cleared with:

```
    echo 1 > /proc/sys/vm/drop_caches
```

runspec command invoked through numactl i.e.:

```
    numactl --interleave=all runspec <etc>
```

Disabled unused Linux services through "stop_services.sh" before running.

---
Hewlett-Packard Company
ProLiant DL580 Gen8
(2.30 GHz, Intel Xeon E7-4850 v2)

SPECfp2006 = 88.6
SPECfp_base2006 = 83.8

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

Test date: May-2014
Hardware Availability: Feb-2014
Software Availability: Sep-2013

Platform Notes

BIOS Configuration:
Intel Hyperthreading Options set to Disabled
HP Power Profile set to Maximum Performance
Minimum Processor Idle Power Core State set to C1E State to Enabled
Minimum Processor Idle Power Packages State set to Package C6 (non-retention) State
Collaborative Power Control set to Disabled
Thermal Configuration set to Maximum Cooling
Processor Power and Utilization Monitoring set to Disabled
Memory Refresh Rate set to Disabled

Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on DL580-Gen8-sr Mon May 12 10:33:43 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 E7-4850 v2 @ 2.30GHz
  4 "physical id"s (chips)
  48 "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 : 12
siblings : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13
cache size : 24576 KB

From /proc/meminfo

MemTotal: 1058855444 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 11 (x86_64)
VERSION = 11
PATCHLEVEL = 3

uname -a:
Linux DL580-Gen8-sr 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013
(ccab990) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 12 16:29 last=S

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Hewlett-Packard Company
ProLiant DL580 Gen8
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Platform Notes (Continued)

SPEC is set to: /cpu2006
Filesystem     Type  Size  Used  Avail  Use% Mounted on
/dev/sda3      ext3  365G   13G  334G   4% /

Additional information from dmidecode:
BIOS HP P79 02/21/2014
Memory:
64x HP 712383-081 16 GB 1333 MHz
32x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 1 TB and the dmidecode description should have one line reading as:
64x HP 712383-081 16 GB 1333 MHz 2 rank

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"
OMP_NUM_THREADS = "48"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

Assuming that the memory populations rules found in the DL580 Gen8 QuickSpecs are followed, HP supports memory running at 1333 MHz on the E7-4850 v2, E7-4830 v2, E7-4820 v2, or E7-4809 v2 processors with any BIOS prior to the 1.03_06-27-2014 ROM. Any BIOS that is the 1.03_06-27-2014 ROM or later, does not support the memory running at 1333 MHz due to a change in the Intel MRC (Memory Reference Code).

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
SPEC CFP2006 Result

Hewlett-Packard Company
ProLiant DL580 Gen8
(2.30 GHz, Intel Xeon E7-4850 v2)

SPECfp2006 = 88.6
SPECfp_base2006 = 83.8

CPU2006 license: 3
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TEST DATE: May-2014
Hardware Availability: Feb-2014
Software Availability: Sep-2013

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.games: -DSPEC_CPU_LP64
  433.milc: -DSPEC_CPU_LP64
  434.zeusmp: -DSPEC_CPU_LP64
  435.gromacs: -DSPEC_CPU_LP64 -nofor_main
  436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
  437.lesie3d: -DSPEC_CPU_LP64
  444.namd: -DSPEC_CPU_LP64
  447.dealII: -DSPEC_CPU_LP64
  450.soplex: -DSPEC_CPU_LP64
  453.povray: -DSPEC_CPU_LP64
  454.calculix: -DSPEC_CPU_LP64 -nofor_main
  459.GemsFDTD: -DSPEC_CPU_LP64
  465.tonto: -DSPEC_CPU_LP64
  470.lbm: -DSPEC_CPU_LP64
  481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
  482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

Peak Compiler Invocation

C benchmarks:
  icc  -m64

C++ benchmarks:
  icpc  -m64

Fortran benchmarks:
  ifort  -m64

Benchmarks using both Fortran and C:
  icc  -m64 ifort  -m64
## SPEC CFP2006 Result

**Hewlett-Packard Company**

ProLiant DL580 Gen8
(2.30 GHz, Intel Xeon E7-4850 v2)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
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<tr>
<td>SPECfp_base2006</td>
<td>83.8</td>
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</table>

- **CPU2006 license:** 3
- **Test sponsor:** Hewlett-Packard Company
- **Tested by:** Hewlett-Packard Company
- **Test date:** May-2014
- **Hardware Availability:** Feb-2014
- **Software Availability:** Sep-2013

### Peak Portability Flags

Same as Base Portability Flags

### Peak Optimization Flags

#### C benchmarks:

- 433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
  -ansi-alias

- 470.lbm: basepeak = yes

- 482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
  -parallel

#### C++ benchmarks:

- 444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
  -auto-ilp32

- 447.dealII: basepeak = yes

- 450.soplex: basepeak = yes

- 453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

#### Fortran benchmarks:

- 410.bwaves: basepeak = yes

- 416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
  -inline-level=0 -scalar-rep-

- 434.zeusmp: basepeak = yes

- 437.leslie3d: basepeak = yes

- 459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
  -inline-level=0 -opt-prefetch -parallel

- 465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
  -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
  -opt-malloc-options=3 -auto -unroll4

Continued on next page
### Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

- **435.gromacs**: `basepeak = yes`
- **436.cactusADM**: `basepeak = yes`
- **454.calculix**: `-xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias`
- **481.wrf**: `basepeak = yes`

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-revD.html](http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revD.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-revD.xml](http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revD.xml)