Hewlett-Packard Company
ProLiant DL580 Gen8
(1.90 GHz, Intel Xeon E7-4809 v2)

SPECfp®2006 = 63.5
SPECfp_base2006 = 60.6

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

SPECfp®2006 = 63.5
SPECfp_base2006 = 60.6

Hardware

CPU Name: Intel Xeon E7-4809 v2
CPU Characteristics:
CPU MHz: 1900
FPU: Integrated
CPU(s) enabled: 24 cores, 4 chips, 6 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

Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64) SP3
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)
SPEC CFP2006 Result

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

L3 Cache: 12 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (64 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1333 MHz and CL9)
Disk Subsystem: 1 x 400 GB SSD SAS, RAID 0
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<td>450</td>
<td>43.3</td>
</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
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
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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 Thu May 15 10:20:15 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 E7-4809 v2 @ 1.90GHz
- 4 "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 caution.)
- cpu cores : 6
- siblings : 6
- physical 0: cores 0 1 2 3 4 5
- physical 1: cores 0 1 2 3 4 5
- physical 2: cores 0 1 2 3 4 5
- physical 3: cores 0 1 2 3 4 5
- cache size : 12288 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 15 10:18 last=S

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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 = "24"

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
Hewlett-Packard Company

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Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gameess: -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.leslie3d: -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

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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

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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/Intel-ic14.0-official-linux64.20140128.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/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revD.xml

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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 June 2014.