Hewlett-Packard Company

ProLiant DL580 Gen9
(2.00 GHz, Intel Xeon E7-8880L v3)

SPECint®2006 = 54.4
SPECint_base2006 = 52.9

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

Hardware
- CPU Name: Intel Xeon E7-8880L v3
- CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
- CPU MHz: 2000
- FPU: Integrated
- CPU(s) enabled: 72 cores, 4 chips, 18 cores/chip
- CPU(s) orderable: 2.4 chip
- Primary Cache: 32 KB I + 32 KB D on chip per core
- Secondary Cache: 256 KB I+D on chip per core
- L3 Cache: 45 MB I+D on chip per chip
- Other Cache: None
- Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
- Disk Subsystem: 2 x 400 GB SAS SSD, RAID 1
- Other Hardware: None

Software
- Operating System: SUSE Linux Enterprise Server 12 (x86_64) 3.12.28-4-default
- Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
- Auto Parallel: Yes
- File System: xfs
- System State: Run level 5 (multi-user)
- Base Pointers: 32/64-bit
- Peak Pointers: 32/64-bit
- Other Software: Microquill SmartHeap V10.0
Hewlett-Packard Company
ProLiant DL580 Gen9
(2.00 GHz, Intel Xeon E7-8880L v3)

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Results Table

<table>
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<td>54.0</td>
<td>127</td>
<td>54.1</td>
</tr>
</tbody>
</table>

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

Submit Notes

The config file option 'submit' was used.

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
Power Profile set to Custom
Power Regulator set to Static High Performance Mode
Minimum Processor Idle Power Core C-State set to C6 State
Energy/Performance Bias set to Maximum Performance
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 1x Refresh
Intel Hyperthreading Options set to Disabled
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on d1580gen9jks Wed May 27 12:41:46 2015

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
Continued on next page
Hewlett-Packard Company
ProLiant DL580 Gen9
(2.00 GHz, Intel Xeon E7-8880L v3)

SPECint2006 = 54.4
SPECint_base2006 = 52.9

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

Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E7-8880L v3 @ 2.00GHz
4 "physical id"s (chips)
72 "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 : 18
siblings : 18
physical 0: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 1: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 2: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
physical 3: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
cache size : 46080 KB

From /proc/meminfo
MemTotal:       529317512 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 0
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.
os-release:
NAME="SLES"
VERSION="12"
VERSION_ID="12"
PRETTY_NAME="SUSE Linux Enterprise Server 12"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12"

uname -a:
Linux dl580gen9jks 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 5 May 27 12:37

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 331G 5.4G 325G 2% /home
Additional information from dmidecode:

Continued on next page
**SPEC CINT2006 Result**

**Hewlett-Packard Company**
ProLiant DL580 Gen9
(2.00 GHz, Intel Xeon E7-8880L v3)

<table>
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</table>

**SPECint2006 =** 54.4
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---

**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 U17 03/13/2015
Memory:
32x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz
64x UNKNOWN NOT AVAILABLE

(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:
32x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz

---

**General Notes**

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "72"

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

---

**Base Compiler Invocation**

C benchmarks:
- icc -m64

C++ benchmarks:
- icpc -m64

---

**Base Portability Flags**

- 400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
- 401.bzip2: -DSPEC_CPU_LP64
- 403.gcc: -DSPEC_CPU_LP64
- 429.mcf: -DSPEC_CPU_LP64
- 445.gobmk: -DSPEC_CPU_LP64
- 456.hmmer: -DSPEC_CPU_LP64
- 458.sjeng: -DSPEC_CPU_LP64
- 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
- 464.h264ref: -DSPEC_CPU_LP64
- 471.omnetpp: -DSPEC_CPU_LP64
- 473.astar: -DSPEC_CPU_LP64

Continued on next page
Hewlett-Packard Company

Specint2006 = 54.4
Specint_base2006 = 52.9

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

Base Portability Flags (Continued)

483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
  icc  -m64

  400.perlbench: icc  -m32  -L/opt/intel/composer_xe_2015/lib/ia32
  445.gobmk: icc  -m32  -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks (except as noted below):
icpc  -m64

  471.omnetpp: icpc  -m32  -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
  401.bzip2: -DSPEC_CPU_LP64
  403.gcc: -DSPEC_CPU_LP64
  429.mcf: -DSPEC_CPU_LP64
  456.hmmer: -DSPEC_CPU_LP64
  458.sjeng: -DSPEC_CPU_LP64
  462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
  464.h264ref: -DSPEC_CPU_LP64

Continued on next page
Hewlett-Packard Company
ProLiant DL580 Gen9
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: May-2015
Hardware Availability: Jun-2015
Software Availability: Oct-2014

Peak Portability Flags (Continued)

473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
-opt-prefetch -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -03 -no-prec-div -inline-cALLOC
-opt-mALLOC-OPtIOnS=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-RA-region-strategy=block -ansi-alias
-W1,-z,muldefs -L/sh -Lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes
## SPEC CINT2006 Result

### Hewlett-Packard Company

**ProLiant DL580 Gen9**  
**(2.00 GHz, Intel Xeon E7-8880L v3)**

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---

### 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/Intel-ic15.0-official-linux64.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/Intel-ic15.0-official-linux64.xml)
- [http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml](http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml)

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Tested with SPEC CPU2006 v1.2.

Report generated on Tue Jun 30 16:17:00 2015 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 30 June 2015.