## Hewlett-Packard Company

ProLiant DL560 Gen9  
(2.60 GHz, Intel Xeon E5-4627 v3)

### SPECfp®2006 = 112  
SPECfp_base2006 = 105

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<td>482.sphinx3</td>
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</table>

### Hardware

- **CPU Name:** Intel Xeon E5-4627 v3  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.20 GHz  
- **CPU MHz:** 2600  
- **FPU:** Integrated  
- **CPU(s) enabled:** 40 cores, 4 chips, 10 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

### Software

- **Operating System:** SUSE Linux Enterprise Server 12 (x86_64)  
  Kernel 3.12.28-4-default  
- **Compiler:** C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;  
  Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux  
- **Auto Parallel:** Yes  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)

---

The graphs and charts are omitted due to format constraints.
Hewlett-Packard Company

ProLiant DL560 Gen9
(2.60 GHz, Intel Xeon E5-4627 v3)

SPECfp2006 = 112
SPECfp_base2006 = 105

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company
L3 Cache: 25 MB I+D on chip per chip
Base Pointers: 64-bit
Other Cache: None
Peak Pointers: 32/64-bit
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
Other Software: None
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None
Results Table

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</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 State set to C6 State
Minimum Processor Idle Power Package State set to Package C6 (retention) State
Energy/Performance Bias set to Maximum Performance
Collaborative Power Control set to Disabled
Thermal Configuration set to Maximum Cooling

Continued on next page
Hewlett-Packard Company
ProLiant DL560 Gen9
(2.60 GHz, Intel Xeon E5-4627 v3)

SPECfp2006 = 112
SPECfp_base2006 = 105

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

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

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 dl560gen9sles12cpu Thu Apr 30 20:16:01 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

From /proc/cpuinfo
model name: Intel(R) Xeon(R) CPU E5-4627 v3 @ 2.60GHz
  4 "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: 10
  siblings: 10
  physical 0: cores 0 2 3 4 8 9 10 11 12
  physical 1: cores 0 2 3 4 8 9 10 11 12
  physical 2: cores 0 2 3 4 8 9 10 11 12
  physical 3: cores 0 2 3 4 8 9 10 11 12
  cache size: 25600 KB

From /proc/meminfo
MemTotal: 529312788 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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 dl560gen9sles12cpu 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC
  2014 (9879db4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 30 00:09

Continued on next page
### Platform Notes (Continued)

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 331G 6.0G 325G 2% /home

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 P85 03/05/2015
Memory:
28x HP 752369-081 16 GB 2 rank 2133 MHz
16x UNKNOWN NOT AVAILABLE
4x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 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 two lines reading as:
28x HP 752369-081 16 GB 2 rank 2133 MHz
4x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz

### General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "40"

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

Fortran benchmarks:
- ifort -m64

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

**Hewlett-Packard Company**

ProLiant DL560 Gen9 (2.60 GHz, Intel Xeon E5-4627 v3)

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SPECfp_base2006 = 105

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

### Base Portability Flags

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### Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -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`

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

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

Peak Compiler Invocation (Continued)

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:  -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  -ansi-alias

470.lbm:  basepeak = yes

482.sphinx3:  basepeak = yes

C++ benchmarks:

444.namd:  -xCORE-AVX2(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:  -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

Fortran benchmarks:

410.bwaves:  basepeak = yes

416.gamess:  -xCORE-AVX2(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

Continued on next page
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CPU2006 license: 3
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Peak Optimization Flags (Continued)

459.GemsFD:
-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto:
-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -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 -03 -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-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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For other inquiries, please contact webmaster@spec.org.

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