Hewlett-Packard Company

ProLiant DL580 Gen9
(1.90 GHz, Intel Xeon E7-4820 v3)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

Hardware

CPU Name: Intel Xeon E7-4820 v3
CPU Characteristics: 40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU MHz: 1900
FPU: Integrated
CPU(s) enabled: 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: 25 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1333 MHz)
Disk Subsystem: 2 x 400 GB SAS SSD, RAID 1
Other Hardware: None

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
Auto Parallel: No
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0
SPEC CINT2006 Result

Hewlett-Packard Company

ProLiant DL580 Gen9
(1.90 GHz, Intel Xeon E7-4820 v3)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

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

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.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

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>

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
   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
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
Continued on next page
Hewlett-Packard Company

ProLiant DL580 Gen9
(1.90 GHz, Intel Xeon E7-4820 v3)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

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

Platform Notes (Continued)

running on dl580gen9jks Mon Jun 22 09:52:59 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 E7-4820 v3 @ 1.90GHz
4 "physical id"s (chips)
80 "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 : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
physical 2: cores 0 1 2 3 4 8 9 10 11 12
physical 3: cores 0 1 2 3 4 8 9 10 11 12

From /proc/meminfo

MemTotal:       529316648 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /proc/meminfo

MemTotal: 529316648 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /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 3 Jun 22 09:52 last=5

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

SPEC is set to: /home/cpu2006

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
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</thead>
<tbody>
<tr>
<td>/dev/sda4</td>
<td>xfs</td>
<td>331G</td>
<td>5.4G</td>
<td>325G</td>
<td>2%</td>
<td>/home</td>
</tr>
</tbody>
</table>

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 U17 03/13/2015
Memory:
32x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1333 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 1333 MHz

### General Notes

Environment variables set by runspec before the start of the run:

LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

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

### Base Compiler Invocation

C benchmarks:

```bash
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

C++ benchmarks:

```bash
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

### Base Portability Flags

- 400.perlbench: -DSPEC_CPU_LINUX_IA32
- 462.libquantum: -DSPEC_CPU_LINUX
- 483.xalancbmk: -DSPEC_CPU_LINUX
SPEC CINT2006 Result

Hewlett-Packard Company

ProLiant DL580 Gen9
(1.90 GHz, Intel Xeon E7-4820 v3)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

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

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3 -W1,-z,muldefs -L/sh -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
  icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
  400.perlbench: icc -m64
  401.bzip2: icc -m64
  456.hmmer: icc -m64
  458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX
### Peak Optimization Flags

#### C benchmarks:

- **perlbench**: `-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`

- **bzip2**: `-xCORE-AVX2` (pass 2) `-prof-gen` (pass 1) `-ipo` (pass 2)
- `-O3` (pass 2) `-no-prec-div` (pass 2) `-prof-use` (pass 2)
- `-opt-prefetch` `-auto-ilp32` `-ansi-alias`

- **gcc**: `basepeak` = yes

- **mcf**: `basepeak` = yes

- **gobmk**: `-xCORE-AVX2` (pass 2) `-prof-gen` (pass 1) `-prof-use` (pass 2)
- `-ansi-alias` `-opt-mem-layout-trans=3`

- **hammer**: `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-unroll2` `-auto-ilp32`

- **sjeng**: `-xCORE-AVX2` (pass 2) `-prof-gen` (pass 1) `-ipo` (pass 2)
- `-O3` (pass 2) `-no-prec-div` (pass 2) `-prof-use` (pass 2)
- `-unroll4` `-auto-ilp32`

- **libquantum**: `basepeak` = yes

- **h264ref**: `-xCORE-AVX2` (pass 2) `-prof-gen` (pass 1) `-ipo` (pass 2)
- `-O3` (pass 2) `-no-prec-div` (pass 2) `-prof-use` (pass 2)
- `-unroll2` `-ansi-alias`

#### C++ benchmarks:

- **omnetpp**: `-xCORE-AVX2` (pass 2) `-prof-gen` (pass 1) `-ipo` (pass 2)
- `-O3` (pass 2) `-no-prec-div` (pass 2) `-prof-use` (pass 2)
- `-ansi-alias` `-opt-ra-region-strategy=block` `-Wl,-z,muldefs` `-L/sh` `-lsmartheap`

- **astar**: `basepeak` = yes

- **xalancbmk**: `basepeak` = yes

### Peak Other Flags

#### C benchmarks:

- **gcc**: `-Dalloca=_alloca`
### SPEC CINT2006 Result

**Hewlett-Packard Company**  
ProLiant DL580 Gen9  
(1.90 GHz, Intel Xeon E7-4820 v3)  

<table>
<thead>
<tr>
<th>CPU2006 license: 3</th>
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<td>Software Availability: Oct-2014</td>
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**SPECint_rate2006 =** 1210  
**SPECint_rate_base2006 =** 1160

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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