SPEC® CINT2006 Result
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Hewlett-Packard Company

ProLiant DL120 Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

SPECint®_rate2006 =   693

SPECint_rate_base2006 = 669

CPU2006 license: 3   **Test date:**   Mar-2015
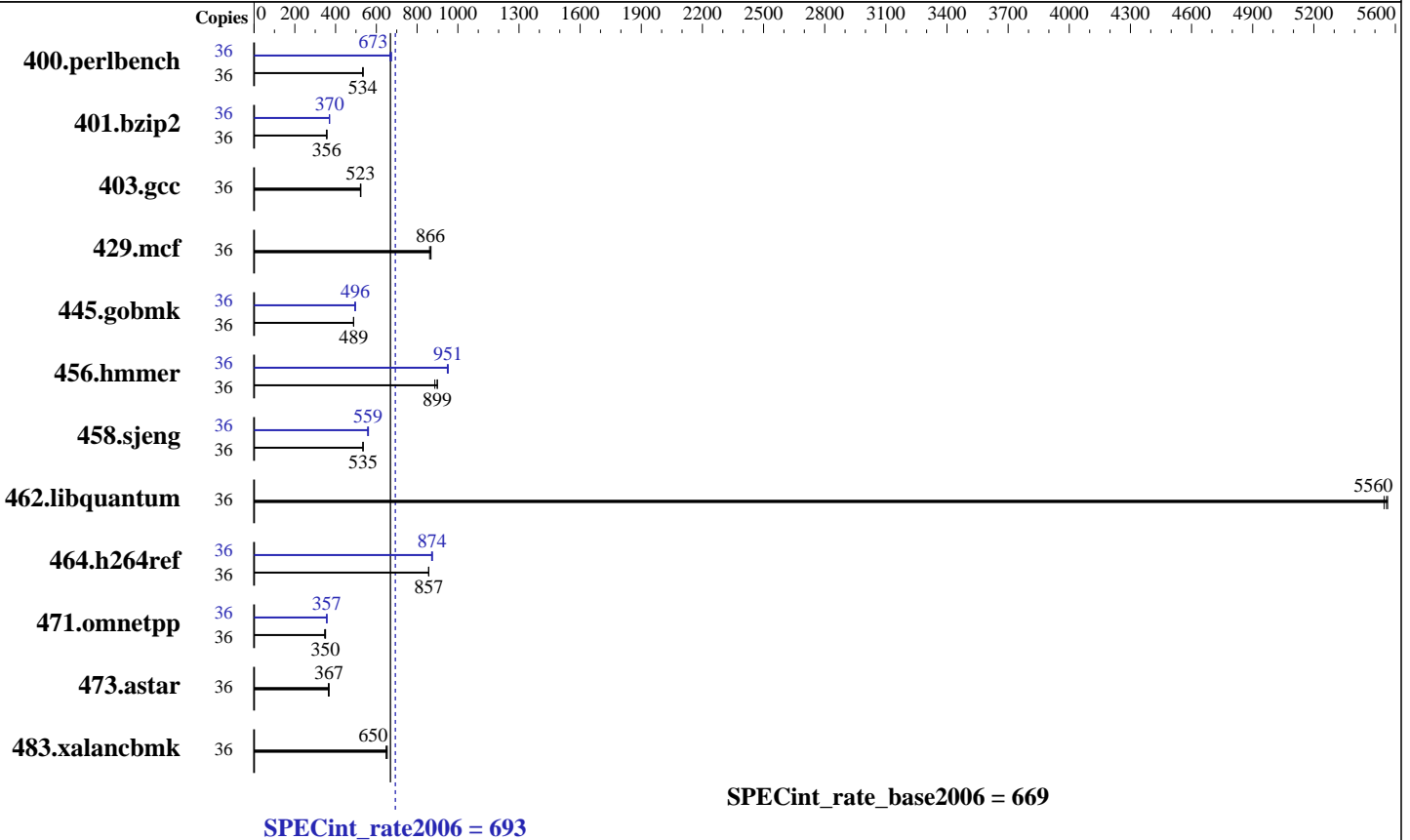**Test sponsor:** Hewlett-Packard Company   **Hardware Availability:** Mar-2015
Tested by: Hewlett-Packard Company   **Software Availability:** Sep-2014

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Hardware		**Software**

Hardware

CPU Name:	Intel Xeon E5-2699 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	18 cores, 1 chip, 18 cores/chip, 2 threads/core
CPU(s) orderable:	1 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:	128 GB (8 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 1 TB SATA, 7200 RPM, RAID 0
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.0 (Maipo)
	Kernel 3.10.0-123.el7.x86_64
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

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	36	659	534	**<u>659</u>**	**<u>534</u>**	657	535	36	522	674	527	667	**<u>523</u>**	**<u>673</u>**
401.bzip2	36	971	358	977	356	**<u>975</u>**	**<u>356</u>**	36	939	370	**<u>939</u>**	**<u>370</u>**	940	370
403.gcc	36	**<u>554</u>**	**<u>523</u>**	555	522	553	524	36	**<u>554</u>**	**<u>523</u>**	555	522	553	524
429.mcf	36	**<u>379</u>**	**<u>866</u>**	381	861	378	868	36	**<u>379</u>**	**<u>866</u>**	381	861	378	868
445.gobmk	36	772	489	774	488	**<u>772</u>**	**<u>489</u>**	36	**<u>761</u>**	**<u>496</u>**	759	497	764	495
456.hmmer	36	**<u>374</u>**	**<u>899</u>**	379	887	373	899	36	353	952	354	948	**<u>353</u>**	**<u>951</u>**
458.sjeng	36	**<u>815</u>**	**<u>535</u>**	815	534	814	535	36	**<u>779</u>**	**<u>559</u>**	782	557	776	561
462.libquantum	36	135	5540	**<u>134</u>**	**<u>5560</u>**	134	5560	36	135	5540	**<u>134</u>**	**<u>5560</u>**	134	5560
464.h264ref	36	929	857	930	857	**<u>930</u>**	**<u>857</u>**	36	**<u>912</u>**	**<u>874</u>**	914	871	910	875
471.omnetpp	36	650	346	641	351	**<u>643</u>**	**<u>350</u>**	36	632	356	**<u>631</u>**	**<u>357</u>**	629	358
473.astar	36	693	365	687	368	**<u>689</u>**	**<u>367</u>**	36	693	365	687	368	**<u>689</u>**	**<u>367</u>**
483.xalancbmk	36	380	653	383	648	**<u>382</u>**	**<u>650</u>**	36	380	653	383	648	**<u>382</u>**	**<u>650</u>**

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 set to HP Static High Performance Mode
     Minimum Processor Idle Power Package C-State set to No Package State
     Energy/Performance Bias set to Maximum Performance
     QPI Snoop Configuration set to Cluster on Die
     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

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Platform Notes (Continued)

```
Sysinfo program /cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Fri Mar  6 11:21:29 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 E5-2699 v3 @ 2.30GHz
      1 "physical id"s (chips)
      36 "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 : 9
      siblings  : 18
      physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
   cache size : 23040 KB

From /proc/meminfo
   MemTotal:       131731996 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
   Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57
   EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 6 11:07

SPEC is set to: /cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda4       xfs   927G   78G  850G   9% /
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
```

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Platform Notes (Continued)

```
   determined", but the intent may not be met, as there are frequent changes to
   hardware, firmware, and the "DMTF SMBIOS" standard.

    BIOS HP P86 12/25/2014
    Memory:
    5x HP 752369-081 16 GB 2 rank 2133 MHz
    3x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/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:

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

C++ benchmarks:

```
    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
```

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 -Wl,-z,muldefs -L/sh -lsmartheap
```

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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:

>   400.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

>   401.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

>   403.gcc: basepeak = yes

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Peak Optimization Flags (Continued)

429.mcf: basepeak = yes

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

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.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

462.libquantum: basepeak = yes

464.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:

471.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

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

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/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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