



SPEC® CFP2006 Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL385 Gen10
(2.10 GHz, AMD EPYC 7281)

SPECfp®_rate2006 = Not Run

SPECfp_rate_base2006 = 1260

CPU2006 license: 3

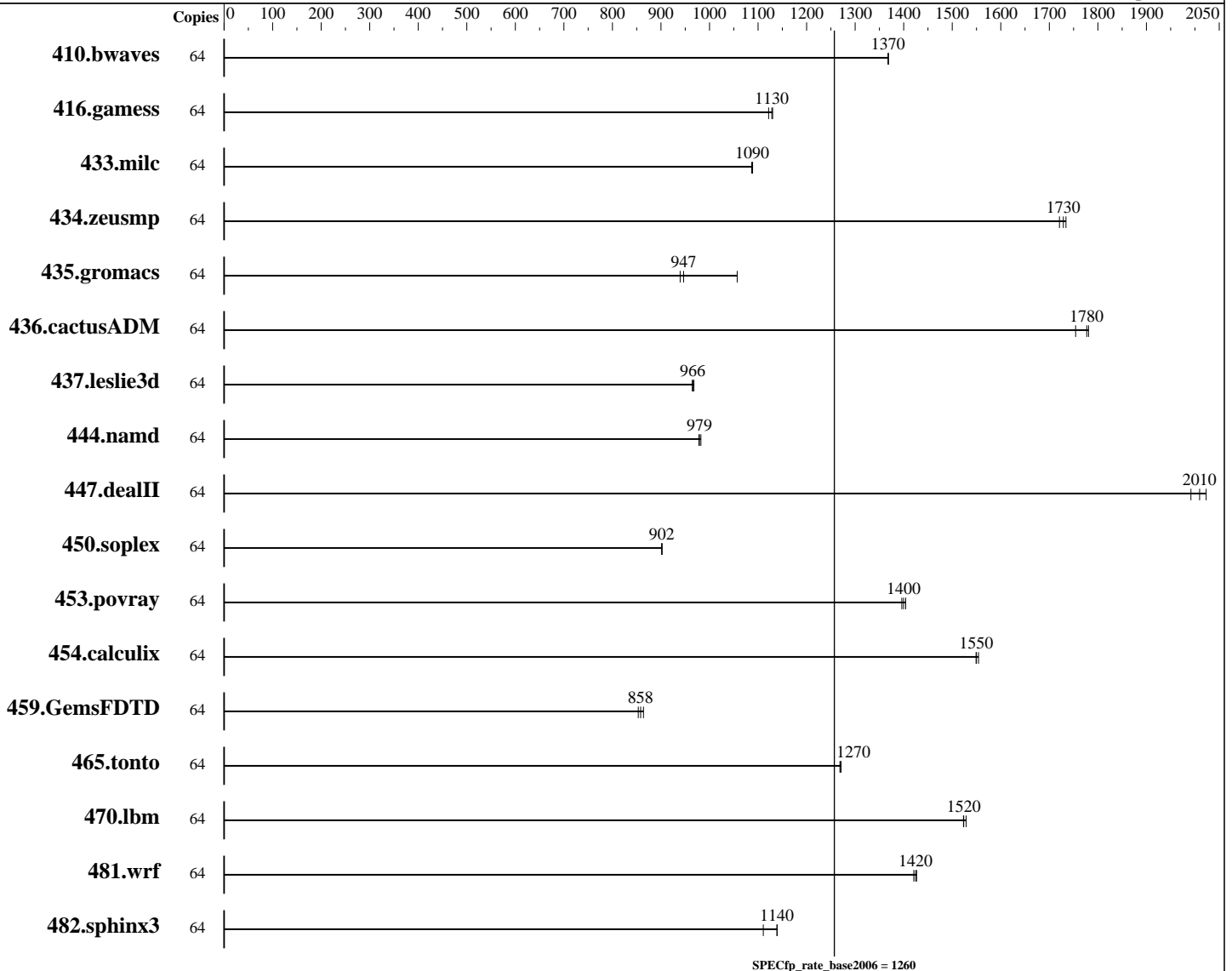
Test sponsor: HPE

Tested by: HPE

Test date: Nov-2017

Hardware Availability: Nov-2017

Software Availability: Sep-2017



Hardware

CPU Name: AMD EPYC 7281
 CPU Characteristics: AMD Turbo CORE technology up to 2.70 GHz
 CPU MHz: 2100
 FPU: Integrated
 CPU(s) enabled: 32 cores, 2 chips, 16 cores/chip, 2 threads/core
 CPU(s) orderable: 1, 2 chip(s)
 Primary Cache: 64 KB I + 32 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 12 (x86_64) SP3
 Kernel 4.4.73-5-default
 Compiler: C/C++/Fortran: Version 4.5.2.1 of x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable

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L3 Cache: 32 MB I+D on chip per chip, 4 MB shared / 2 cores
Other Cache: None
Memory: 1 TB (16 x 64 GB 4Rx4 PC4-2666V-L)
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None

Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	64	636	1370	<u>636</u>	<u>1370</u>	636	1370							
416.gamess	64	1109	1130	1117	1120	<u>1111</u>	<u>1130</u>							
433.milc	64	<u>540</u>	<u>1090</u>	540	1090	541	1090							
434.zeusmp	64	338	1720	<u>337</u>	<u>1730</u>	336	1730							
435.gromacs	64	<u>483</u>	<u>947</u>	486	939	432	1060							
436.cactusADM	64	429	1780	<u>430</u>	<u>1780</u>	436	1750							
437.leslie3d	64	622	968	<u>623</u>	<u>966</u>	624	964							
444.namd	64	525	978	523	982	<u>524</u>	<u>979</u>							
447.dealII	64	368	1990	<u>364</u>	<u>2010</u>	362	2020							
450.soplex	64	592	901	592	902	<u>592</u>	<u>902</u>							
453.povray	64	244	1400	<u>243</u>	<u>1400</u>	242	1400							
454.calculix	64	<u>341</u>	<u>1550</u>	340	1550	341	1550							
459.GemsFDTD	64	796	853	<u>791</u>	<u>858</u>	786	864							
465.tonto	64	495	1270	496	1270	<u>496</u>	<u>1270</u>							
470.lbm	64	577	1520	575	1530	<u>577</u>	<u>1520</u>							
481.wrf	64	503	1420	<u>502</u>	<u>1420</u>	501	1430							
482.sphinx3	64	1123	1110	<u>1095</u>	<u>1140</u>	1095	1140							

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.
'numactl' was used to bind copies to the cores.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Set dirty_ratio=8 to limit dirty cache to 8% of memory
Set swappiness=1 to swap only if necessary

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Operating System Notes (Continued)

Set zone_reclaim_mode=1 to free local node memory and avoid remote memory sync then drop_caches=3 to reset caches before invoking runcpu
Linux governor set to performance with cpupower "cpupower frequency-set -r -g performance"
Transparent huge pages were enabled for this run (OS default)

Set vm/nr_hugepages=57344 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

Platform Notes

BIOS Configuration:

Thermal Configuration set to Maximum Cooling
Performance Determinism set to Power Deterministic
Memory Patrol Scrubbing set to Disabled
Workload Pofile set to General Throughput Compute
Minimum Processor Idle Power Core C-State set to C6 State

General Notes

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

HUGETLB_LIMIT = "896"

LD_LIBRARY_PATH = "/home/cpu2006/amd1603-rate-libs-revB/32:/home/cpu2006/amd1603-rate-libs-revB/64"

The binaries were built with the x86 Open64 Compiler Suite,
which is only available from (and supported by) AMD at
<http://developer.amd.com/tools-and-sdks/cpu-development/x86-open64-compiler-suite/>

Base Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

Fortran benchmarks:
openf95

Benchmarks using both Fortran and C:
opencc openf95

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

```

416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
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
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
-fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

Base Optimization Flags

C benchmarks:

```

-Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m -IPA:plimit=8000
-IPA:small_pu=100 -mso -march=bdver1 -mno-fma4 -mno-xop -mno-tbm
-WB, -Wl, -z,muldefs

```

C++ benchmarks:

```

-Ofast -static -CG:load_exe=0 -OPT:malloc_alg=1 -INLINE:aggressive=on
-HP:bd=2m:heap=2m -D__OPEN64_FAST_SET -march=bdver2 -mno-fma4
-mno-xop -mno-tbm -WB, -Wl, -z,muldefs

```

Fortran benchmarks:

```

-Ofast -LNO:blocking=off -LNO:simd_peel_align=on -OPT:rsqrt=2
-OPT:unroll_size=256 -HP:bd=2m:heap=2m -mso -march=bdver1 -mno-fma4
-mno-xop -mno-tbm -WB, -Wl, -z,muldefs

```

Benchmarks using both Fortran and C:

```

-Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m -IPA:plimit=8000
-IPA:small_pu=100 -mso -march=bdver1 -mno-fma4 -mno-xop -mno-tbm
-WB, -Wl, -z,muldefs -LNO:blocking=off -LNO:simd_peel_align=on
-OPT:rsqrt=2 -OPT:unroll_size=256

```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-openflags-rate-revA-I.html>

<http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revC.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/x86-openflags-rate-revA-I.xml>

<http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-AMD-V1.2-EPYC-revC.xml>



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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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