



# SPEC® CINT2006 Result

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**Hewlett Packard Enterprise**

(Test Sponsor: HPE)

ProLiant DL385 Gen10  
(2.30 GHz, AMD EPYC 7451)

**SPECint®\_rate2006 = Not Run**

**SPECint\_rate\_base2006 = 1870**

**CPU2006 license:** 3

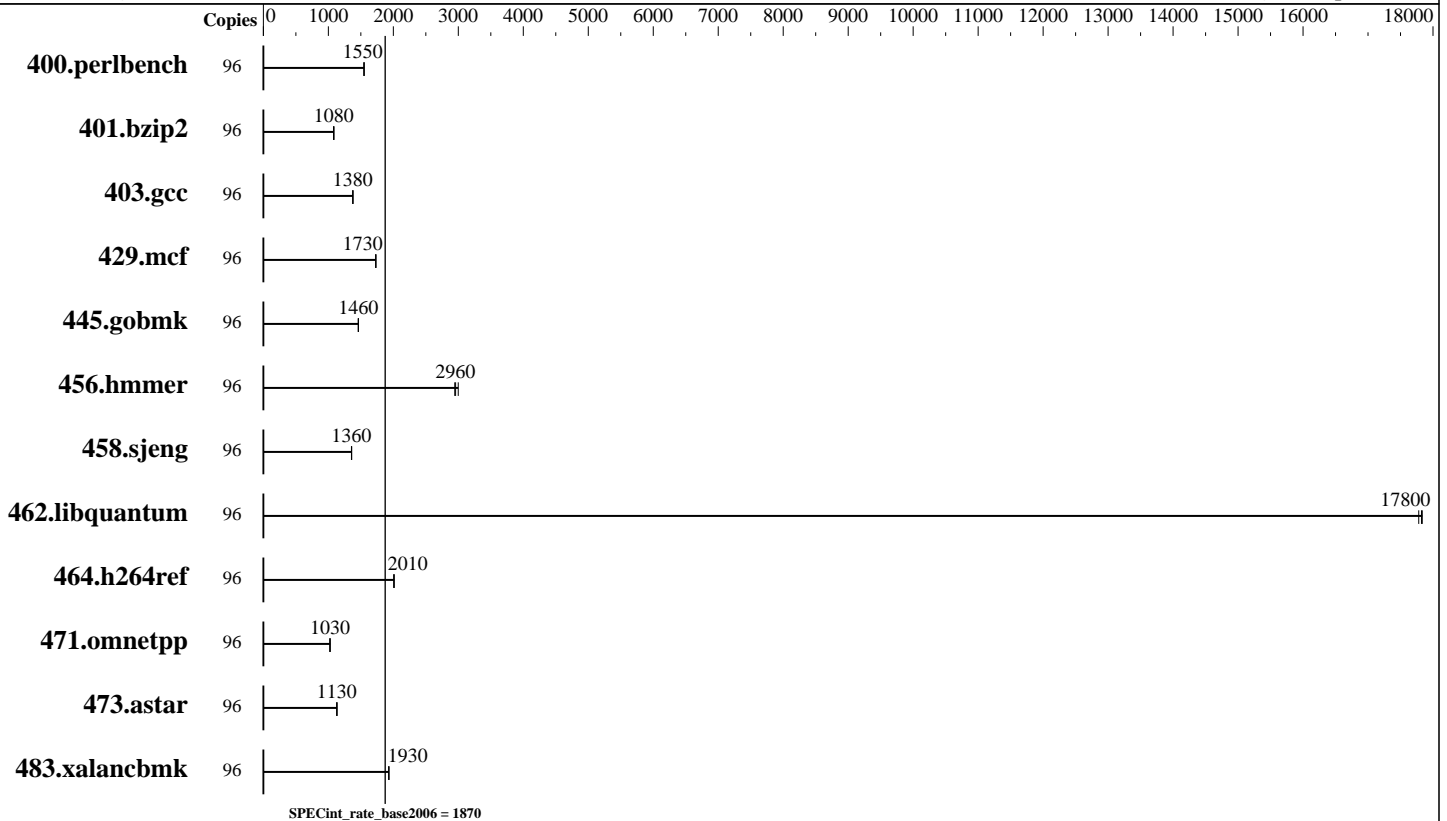
**Test sponsor:** HPE

**Tested by:** HPE

**Test date:** Dec-2017

**Hardware Availability:** Nov-2017

**Software Availability:** Sep-2017



## Hardware

**CPU Name:** AMD EPYC 7451  
**CPU Characteristics:** AMD Turbo CORE technology up to 3.20 GHz  
**CPU MHz:** 2300  
**FPU:** Integrated  
**CPU(s) enabled:** 48 cores, 2 chips, 24 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  
**L3 Cache:** 64 MB I+D on chip per chip, 8 MB shared / 3 cores  
**Other Cache:** None  
**Memory:** 1 TB (16 x 64 GB 4Rx4 PC4-2666V-L)  
**Disk Subsystem:** 1 x 300 GB 15 K RPM SAS, RAID 0  
**Other Hardware:** None

## Software

**Operating System:** SUSE Linux Enterprise Server 12 (x86\_64) SP3  
Kernel 4.4.73-5-default  
**Compiler:** C/C++: 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:** 32/64-bit  
**Peak Pointers:** Not Applicable  
**Other Software:** MicroQuill SmartHeap 10.0 32-bit Library for Linux



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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	96	606	1550	605	1550	<b><u>605</u></b>	<b><u>1550</u></b>							
401.bzip2	96	858	1080	853	1090	<b><u>856</u></b>	<b><u>1080</u></b>							
403.gcc	96	<b><u>561</u></b>	<b><u>1380</u></b>	562	1380	560	1380							
429.mcf	96	506	1730	506	1730	<b><u>506</u></b>	<b><u>1730</u></b>							
445.gobmk	96	<b><u>688</u></b>	<b><u>1460</u></b>	688	1460	690	1460							
456.hammer	96	<b><u>303</u></b>	<b><u>2960</u></b>	299	3000	304	2950							
458.sjeng	96	855	1360	<b><u>856</u></b>	<b><u>1360</u></b>	857	1360							
462.libquantum	96	112	17800	112	17800	<b><u>112</u></b>	<b><u>17800</u></b>							
464.h264ref	96	1055	2010	1058	2010	<b><u>1058</u></b>	<b><u>2010</u></b>							
471.omnetpp	96	587	1020	584	1030	<b><u>585</u></b>	<b><u>1030</u></b>							
473.astar	96	594	1130	<b><u>596</u></b>	<b><u>1130</u></b>	597	1130							
483.xalancbmk	96	343	1930	343	1930	<b><u>343</u></b>	<b><u>1930</u></b>							

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

Set vm/nr\_hugepages=86016 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 Profile set to General Throughput Compute  
Minimum Processor Idle Power Core C-State set to C6 State  
Processor Power and Utilization Monitoring set to Disabled

## 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"

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## General Notes (Continued)

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

## 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
483.xalancbmk: -DSPEC_CPU_LINUX
```

## Base Optimization Flags

C benchmarks:

```
-Ofast -CG:local_sched_alg=1 -INLINE:aggressive=ON -IPA:plimit=8000
-IPA:small_pu=100 -HP:bd=2m:heap=2m -mso -LNO:prefetch=2
-march=bdver1 -mno-fma4 -mno-xop -mno-tbm
```

C++ benchmarks:

```
-Ofast -m32 -INLINE:aggressive=on -CG:cmp_peep=on -D__OPEN64_FAST_SET
-march=bdver1 -mno-fma4 -mno-xop -mno-tbm
-L/root/work/libraries/SmartHeap-10/lib -lsmartheap
```

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-revD.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-revD.xml>



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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