# SPEC® CINT2006 Result

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## Hewlett-Packard Company

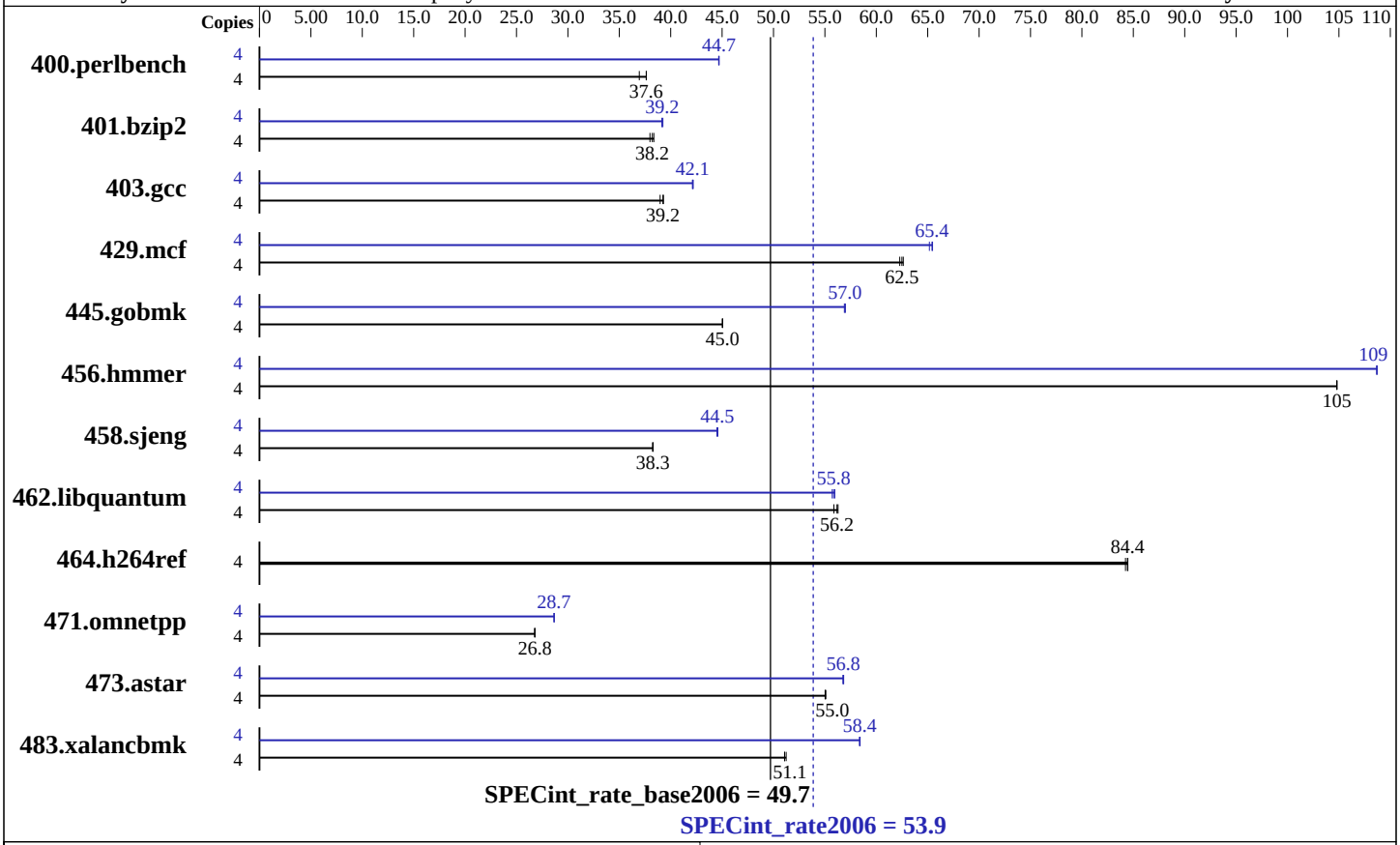
HP Integrity BL860c
(1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECint®_rate2006 = 53.9

SPECint_rate_base2006 = 49.7

**CPU2006 license:** 03
**Test sponsor:** Hewlett-Packard Company
**Tested by:** Hewlett-Packard Company

**Test date:** Jan-2007
**Hardware Availability:** Feb-2007
**Software Availability:** Feb-2007




### Hardware

| | |
|---|---|
| CPU Name: | Dual-Core Intel Itanium 2 9040 |
| CPU Characteristics: | 1.6GHz/18MB, 533MHz FSB |
| CPU MHz: | 1600 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 2 chips, 2 cores/chip |
| CPU(s) orderable: | 1-2 chips |
| Primary Cache: | 16 KB I + 16 KB D on chip per core |
| Secondary Cache: | 1 MB I + 256 KB D on chip per core |
| L3 Cache: | 9 MB I+D on chip per core |
| Other Cache: | None |
| Memory: | 12 GB (12x1GB DIMMs) |
| Disk Subsystem: | 73GB 10K RPM SAS |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | HPUX11i-TCOE B.11.23.0609 |
| Compiler: | HP C/aC++ Developer's Bundle C.11.23.12 |
| Auto Parallel: | No |
| File System: | vxfs |
| System State: | Multi-user |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32-bit |
| Other Software: | MicroQuill Smartheap 8.0 |

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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 | 4 | 1058 | 36.9 | 1039 | 37.6 | **1039** | **37.6** | 4 | 875 | 44.7 | **875** | **44.7** | 874 | 44.7 |
| 401.bzip2 | 4 | 1016 | 38.0 | **1010** | **38.2** | 1006 | 38.4 | 4 | 986 | 39.1 | 984 | 39.2 | **985** | **39.2** |
| 403.gcc | 4 | 826 | 39.0 | **821** | **39.2** | 819 | 39.3 | 4 | 763 | 42.2 | **764** | **42.1** | 765 | 42.1 |
| 429.mcf | 4 | 583 | 62.6 | **584** | **62.5** | 586 | 62.3 | 4 | 560 | 65.2 | **558** | **65.4** | 557 | 65.5 |
| 445.gobmk | 4 | 932 | 45.0 | **932** | **45.0** | 931 | 45.1 | 4 | 736 | 57.0 | **737** | **57.0** | 738 | 56.9 |
| 456.hmmer | 4 | 356 | 105 | **356** | **105** | 356 | 105 | 4 | 343 | 109 | **343** | **109** | 343 | 109 |
| 458.sjeng | 4 | 1266 | 38.2 | **1265** | **38.3** | 1264 | 38.3 | 4 | 1088 | 44.5 | 1086 | 44.6 | **1087** | **44.5** |
| 462.libquantum | 4 | **1475** | **56.2** | 1473 | 56.3 | 1483 | 55.9 | 4 | **1484** | **55.8** | 1481 | 56.0 | 1488 | 55.7 |
| 464.h264ref | 4 | **1048** | **84.4** | 1051 | 84.2 | 1048 | 84.5 | 4 | **1048** | **84.4** | 1051 | 84.2 | 1048 | 84.5 |
| 471.omnetpp | 4 | 933 | 26.8 | 934 | 26.8 | **933** | **26.8** | 4 | 872 | 28.7 | **872** | **28.7** | 872 | 28.7 |
| 473.astar | 4 | 510 | 55.0 | **510** | **55.0** | 510 | 55.1 | 4 | 495 | 56.7 | 494 | 56.8 | **494** | **56.8** |
| 483.xalancbmk | 4 | 540 | 51.1 | **540** | **51.1** | 539 | 51.2 | 4 | 473 | 58.4 | **473** | **58.4** | 472 | 58.4 |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

```
The system had the September 2006 HP-UX 11i v2 Technical Computing
Operating Environment (TCOE) and compilers installed, along with
the following patches:

PHSS_34858  linker + fdp cumulative patch
PHSS_34853  Math Library Cumulative Patch
PHSS_34854  Integrity Unwind Library
PHSS_34855  HP C Compiler (A.06.12)
PHSS_34856  aC++ Compiler (A.06.12)
PHSS_34857  u2comp/be/plugin library patch
PHSS_34395  FORTRAN I/O Library [libIO77]
PHSS_34397  FORTRAN Intrinsics [libF90 B.11.23.17]
PHSS_34399  Fortran Product Patch, v3.1 to v3.1.1
PHKL_34020  Perfmon enhancements and Itanium Dual-Core

The following kernel tunables were set, in addition to the defaults
set by the Technical Computing OE:

dbc_max_pct=20
dbc_min_pct=20
maxdsiz=3221225472
maxssiz=401604608
```

## Base Compiler Invocation

C benchmarks:
```
/opt/ansic/bin/cc -Ae
```

C++ benchmarks:
```
/opt/aCC/bin/aCC -Aa
```

## Base Portability Flags

400.perlbench: -DSPEC_CPU_HPUX_IA64
403.gcc: -DSPEC_CPU_HPUX
462.libquantum: -DSPEC_CPU_HPUX
483.xalancbmk: -DSPEC_CPU_HPUX_IA64

## Base Optimization Flags

C benchmarks:
```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
```

C++ benchmarks:
```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
/usr/lib/hpux32/libCsup.a /opt/smartheap/SmartHeap_8/lib/libsmartheap.a
```

## Peak Compiler Invocation

C benchmarks:
```
/opt/ansic/bin/cc -Ae
```

C++ benchmarks:
```
/opt/aCC/bin/aCC -Aa
```

## Peak Portability Flags

400.perlbench: -DSPEC_CPU_HPUX_IA64
403.gcc: -DSPEC_CPU_HPUX
462.libquantum: -DSPEC_CPU_HPUX
483.xalancbmk: -DSPEC_CPU_HPUX_IA64

# Peak Optimization Flags

C benchmarks:

400.perlbench: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M -Wl,-N

401.bzip2: Same as 400.perlbench

403.gcc: Same as 400.perlbench

429.mcf: Same as 400.perlbench

445.gobmk: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M +Odataprefetch=direct

456.hmmer: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M

458.sjeng: Same as 445.gobmk

462.libquantum: Same as 456.hmmer

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M
/usr/lib/hpux32/libCsup.a /opt/smartheap/SmartHeap_8/lib/libsmartheap.a

473.astar: +Ofaster +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M +Onoparmsoverlap
/usr/lib/hpux32/libCsup.a /opt/smartheap/SmartHeap_8/lib/libsmartheap.a

483.xalancbmk: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M +Onoparmsoverlap
/usr/lib/hpux32/libCsup.a /opt/smartheap/SmartHeap_8/lib/libsmartheap.a

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.07.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.07.xml

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