



# SPEC<sup>®</sup> CINT2006 Result

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## Hewlett-Packard Company

HP Integrity rx6600 (1.6GHz/24MB Dual-Core Intel Itanium 2)

SPECint<sup>®</sup>2006 = 15.7

SPECint\_base2006 = 14.5

CPU2006 license: 03

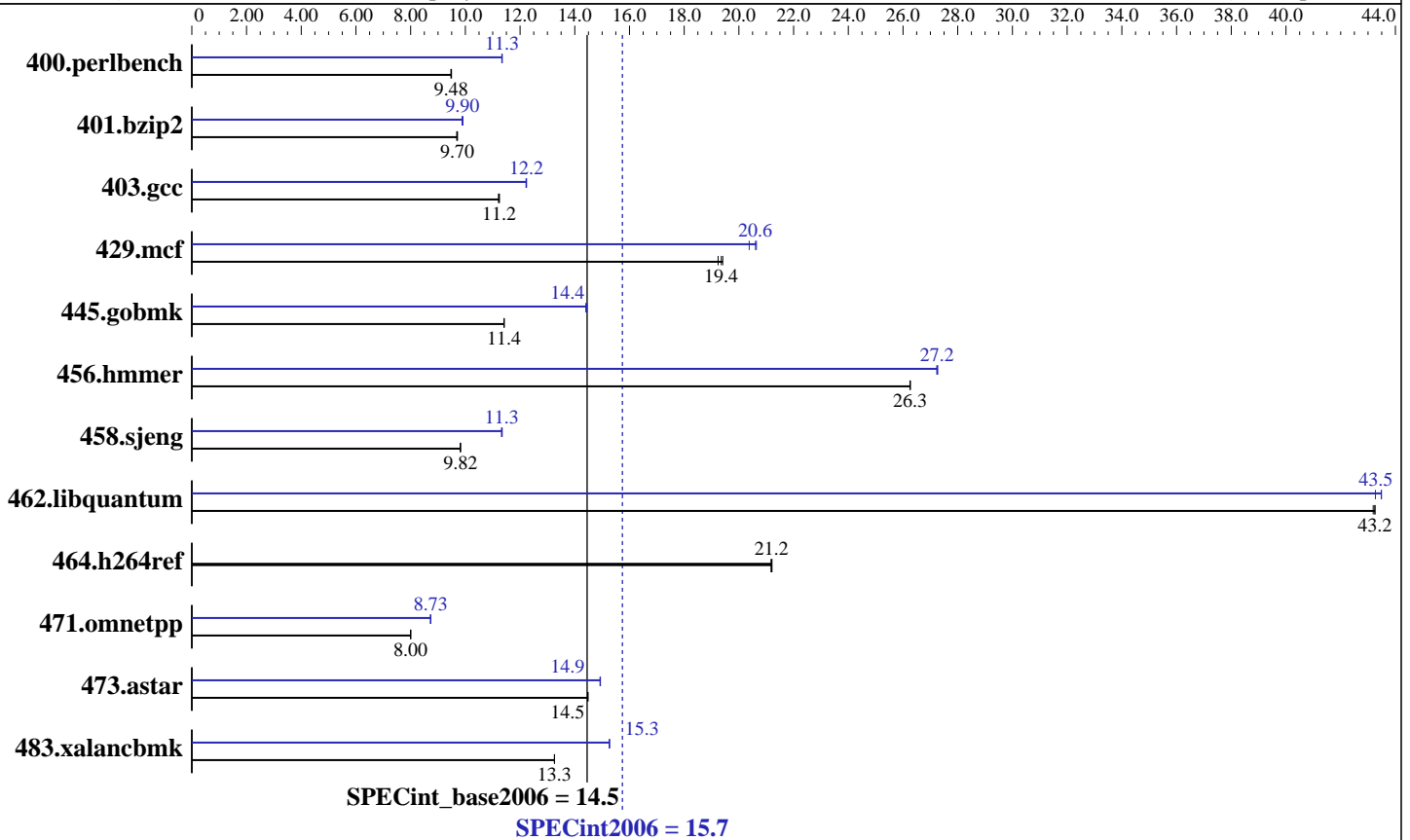
Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Aug-2006

Hardware Availability: Sep-2006

Software Availability: Sep-2006



### Hardware

CPU Name: Dual-Core Intel Itanium 2 9050  
 CPU Characteristics: 1.6GHz/24MB, 533MHz FSB  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1-4 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: 12 MB I+D on chip per core  
 Other Cache: None  
 Memory: 24 GB (24x1GB 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        |             |             |             |            |             |
|----------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|
|                | Seconds     | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       | Seconds     | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       |
| 400.perlbench  | <b>1030</b> | <b>9.48</b> | 1031        | 9.47        | 1029       | 9.49        | 861         | 11.3        | 862         | 11.3        | <b>861</b> | <b>11.3</b> |
| 401.bzip2      | <b>995</b>  | <b>9.70</b> | 997         | 9.68        | 994        | 9.71        | <b>975</b>  | <b>9.90</b> | 977         | 9.88        | 974        | 9.91        |
| 403.gcc        | 718         | 11.2        | <b>716</b>  | <b>11.2</b> | 716        | 11.2        | 658         | 12.2        | 659         | 12.2        | <b>658</b> | <b>12.2</b> |
| 429.mcf        | 470         | 19.4        | 474         | 19.2        | <b>471</b> | <b>19.4</b> | <b>443</b>  | <b>20.6</b> | 448         | 20.4        | 442        | 20.6        |
| 445.gobmk      | 919         | 11.4        | 919         | 11.4        | <b>919</b> | <b>11.4</b> | 726         | 14.4        | <b>727</b>  | <b>14.4</b> | 728        | 14.4        |
| 456.hammer     | <b>355</b>  | <b>26.3</b> | 355         | 26.3        | 355        | 26.3        | 342         | 27.3        | 343         | 27.2        | <b>342</b> | <b>27.2</b> |
| 458.sjeng      | 1233        | 9.81        | <b>1232</b> | <b>9.82</b> | 1232       | 9.82        | <b>1067</b> | <b>11.3</b> | 1069        | 11.3        | 1066       | 11.3        |
| 462.libquantum | 480         | 43.2        | <b>479</b>  | <b>43.2</b> | 479        | 43.3        | <b>477</b>  | <b>43.5</b> | 479         | 43.3        | 476        | 43.5        |
| 464.h264ref    | 1045        | 21.2        | <b>1044</b> | <b>21.2</b> | 1043       | 21.2        | 1045        | 21.2        | <b>1044</b> | <b>21.2</b> | 1043       | 21.2        |
| 471.omnetpp    | 782         | 7.99        | 781         | 8.00        | <b>781</b> | <b>8.00</b> | <b>716</b>  | <b>8.73</b> | 716         | 8.72        | 716        | 8.73        |
| 473.astar      | 485         | 14.5        | 485         | 14.5        | <b>485</b> | <b>14.5</b> | 470         | 14.9        | 470         | 14.9        | <b>470</b> | <b>14.9</b> |
| 483.xalancbmk  | <b>520</b>  | <b>13.3</b> | 520         | 13.3        | 520        | 13.3        | 452         | 15.3        | <b>452</b>  | <b>15.3</b> | 452        | 15.3        |

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

```



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### Platform Notes

The "cpuconfig" EFI command was used prior to booting to deconfigure processors.

Although two cores were enabled during testing, the SPEC CPU2006 benchmarks used only one core.

### Compiler Invocation

C benchmarks:

/opt/ansic/bin/cc -Ae

C++ benchmarks:

/opt/aCC/bin/aCC -Aa

### 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 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

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**Software Availability:** Sep-2006

## Peak Optimization Flags (Continued)

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.hmmcr: +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.hmmcr

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.20090715.06.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.06.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.xml)

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.0.

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