



# SPEC<sup>®</sup> CINT2006 Result

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## Hewlett-Packard Company

SPECint<sup>®</sup>2006 = 12.6

HP Integrity rx2620  
(1.4GHz/12MB Dual-Core Intel Itanium 2)

SPECint\_base2006 = 11.7

CPU2006 license: 03

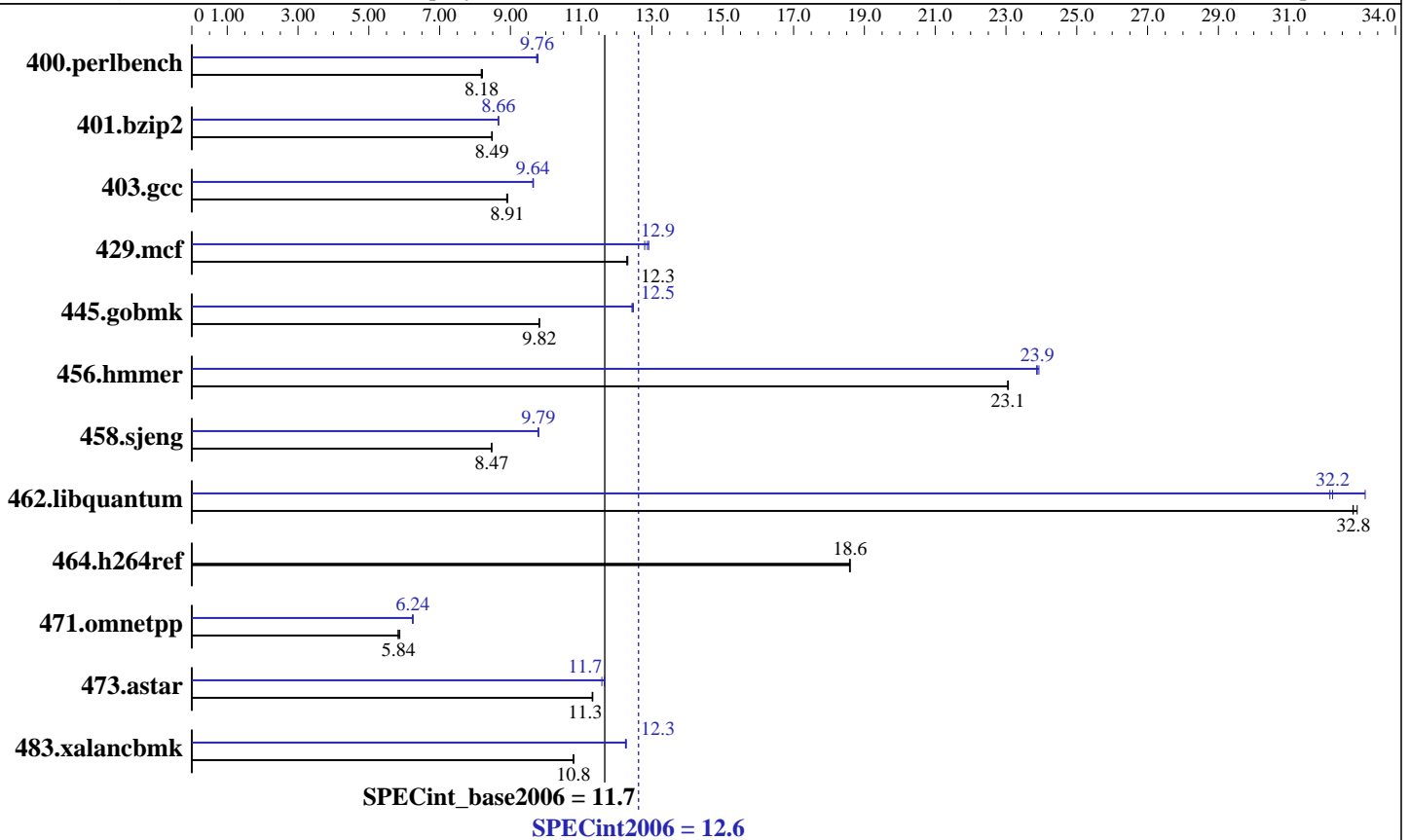
Test date: Oct-2006

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



### Hardware

CPU Name: Dual-Core Intel Itanium 2 9015  
 CPU Characteristics: 1.4GHz/12MB, 400MHz FSB  
 CPU MHz: 1400  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 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: 6 MB I+D on chip per core  
 Other Cache: None  
 Memory: 24 GB (12x2GB DIMMs)  
 Disk Subsystem: 146GB 10K RPM SCSI  
 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	1195	8.18	<b><u>1194</u></b>	<b><u>8.18</u></b>	1190	8.21	999	9.78	<b><u>1001</u></b>	<b><u>9.76</u></b>	1003	9.74
401.bzip2	1139	8.47	1137	8.49	<b><u>1137</u></b>	<b><u>8.49</u></b>	1114	8.66	1114	8.66	<b><u>1114</u></b>	<b><u>8.66</u></b>
403.gcc	902	8.92	<b><u>903</u></b>	<b><u>8.91</u></b>	905	8.89	834	9.65	<b><u>835</u></b>	<b><u>9.64</u></b>	835	9.64
429.mcf	742	12.3	<b><u>741</u></b>	<b><u>12.3</u></b>	740	12.3	<b><u>709</u></b>	<b><u>12.9</u></b>	706	12.9	713	12.8
445.gobmk	<b><u>1068</u></b>	<b><u>9.82</u></b>	1068	9.82	1069	9.81	<b><u>842</u></b>	<b><u>12.5</u></b>	841	12.5	844	12.4
456.hammer	405	23.1	404	23.1	<b><u>405</u></b>	<b><u>23.1</u></b>	<b><u>391</u></b>	<b><u>23.9</u></b>	390	23.9	391	23.9
458.sjeng	<b><u>1428</u></b>	<b><u>8.47</u></b>	1429	8.47	1428	8.47	<b><u>1235</u></b>	<b><u>9.79</u></b>	1235	9.80	1237	9.78
462.libquantum	632	32.8	<b><u>631</u></b>	<b><u>32.8</u></b>	629	32.9	<b><u>643</u></b>	<b><u>32.2</u></b>	625	33.1	644	32.1
464.h264ref	1190	18.6	<b><u>1190</u></b>	<b><u>18.6</u></b>	1191	18.6	1190	18.6	<b><u>1190</u></b>	<b><u>18.6</u></b>	1191	18.6
471.omnetpp	<b><u>1071</u></b>	<b><u>5.84</u></b>	1073	5.83	1064	5.88	<b><u>1002</u></b>	<b><u>6.24</u></b>	1000	6.25	1002	6.24
473.astar	620	11.3	<b><u>620</u></b>	<b><u>11.3</u></b>	621	11.3	<b><u>603</u></b>	<b><u>11.7</u></b>	602	11.7	606	11.6
483.xalancbmk	<b><u>640</u></b>	<b><u>10.8</u></b>	639	10.8	640	10.8	563	12.3	562	12.3	<b><u>563</u></b>	<b><u>12.3</u></b>

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

Continued on next page



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## 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/libsmarheap.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/libsmarheap.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/libsmarheap.a

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.11.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.11.html)

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.11.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.11.xml)

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

Tested with SPEC CPU2006 v1.0.

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