



# SPEC® CINT2006 Result

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## Hewlett-Packard Company

**SPECint®2006 = 15.1**

HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

**SPECint\_base2006 = 13.9**

CPU2006 license: 03

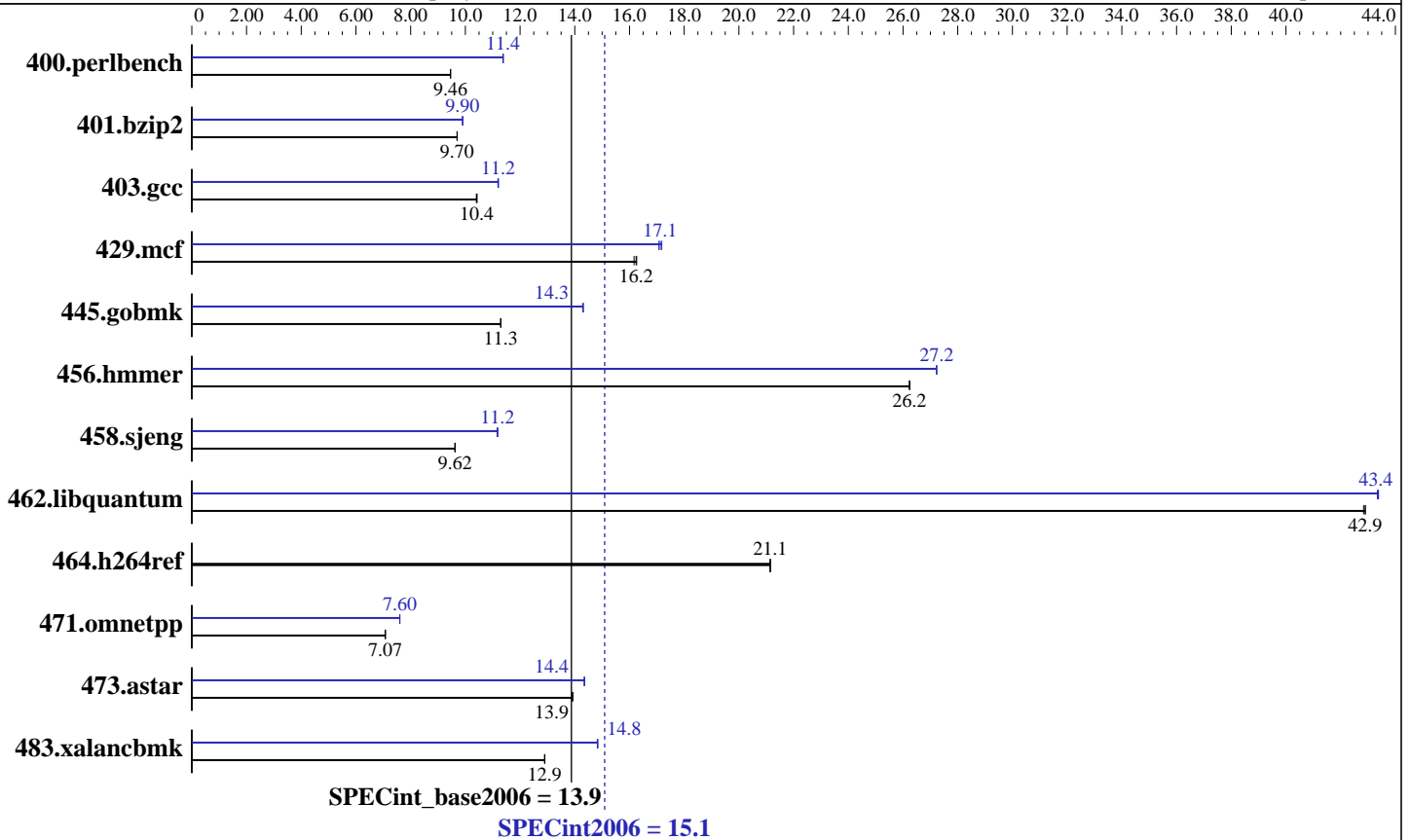
Test date: Sep-2006

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



### Hardware

CPU Name: Dual-Core Intel Itanium 2 9040  
 CPU Characteristics: 1.6GHz/18MB, 533MHz FSB  
 CPU MHz: 1600  
 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: 9 MB I+D on chip per core  
 Other Cache: None  
 Memory: 16 GB (8x2GB DIMMs, AD124A 8-DIMM memory carrier)  
 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	1033	9.45	1033	9.46	<b>1033</b>	<b>9.46</b>	859	11.4	<b>858</b>	<b>11.4</b>	858	11.4
401.bzip2	995	9.70	995	9.70	<b>995</b>	<b>9.70</b>	<b>975</b>	<b>9.90</b>	975	9.90	974	9.90
403.gcc	772	10.4	774	10.4	<b>773</b>	<b>10.4</b>	<b>719</b>	<b>11.2</b>	719	11.2	718	11.2
429.mcf	<b>562</b>	<b>16.2</b>	564	16.2	561	16.3	531	17.2	<b>533</b>	<b>17.1</b>	534	17.1
445.gobmk	<b>929</b>	<b>11.3</b>	929	11.3	928	11.3	734	14.3	<b>733</b>	<b>14.3</b>	733	14.3
456.hammer	356	26.2	356	26.2	<b>356</b>	<b>26.2</b>	343	27.2	<b>343</b>	<b>27.2</b>	343	27.2
458.sjeng	1258	9.62	<b>1258</b>	<b>9.62</b>	1256	9.63	1084	11.2	<b>1083</b>	<b>11.2</b>	1082	11.2
462.libquantum	484	42.8	<b>483</b>	<b>42.9</b>	483	42.9	478	43.3	<b>478</b>	<b>43.4</b>	478	43.4
464.h264ref	1046	21.1	<b>1046</b>	<b>21.1</b>	1047	21.1	1046	21.1	<b>1046</b>	<b>21.1</b>	1047	21.1
471.omnetpp	<b>884</b>	<b>7.07</b>	884	7.07	883	7.07	<b>822</b>	<b>7.60</b>	822	7.60	822	7.60
473.astar	504	13.9	504	13.9	<b>504</b>	<b>13.9</b>	489	14.4	<b>489</b>	<b>14.4</b>	489	14.3
483.xalancbmk	535	12.9	<b>535</b>	<b>12.9</b>	535	12.9	465	14.8	<b>465</b>	<b>14.8</b>	465	14.8

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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## 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.20090715.08.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.08.html)

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.08.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.08.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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