Hewlett-Packard Company
HP Integrity rx8640 (1.6GHz/24MB Dual-Core Intel Itanium 2)

**SPECint_rate2006 = 209**
**SPECint_rate_base2006 = 193**

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

**Test date:** Sep-2006
**Hardware Availability:** Sep-2006
**Software Availability:** Sep-2006

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<tr>
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</tbody>
</table>

**Software**

- **Operating System:** HPUX11i-TCOE B.11.23.0609
- **Compiler:** HP C/C++ 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

**Hardware**

- **CPU Name:** Dual-Core Intel Itanium 2 9050
- **CPU Characteristics:** 1.6GHz/24MB, 533MHz FSB
- **CPU MHz:** 1600
- **FPU:** Integrated
- **CPU(s) enabled:** 16 cores, 2 chips, 2 cores/chip
- **CPU(s) orderable:** 1-16 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:** 64 GB (32x2GB DIMMs)
- **Disk Subsystem:** 73GB 15K RPM SCSI
- **Other Hardware:** None
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Results Table

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</tbody>
</table>

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 system was configured as a single partition with 2 cells and 4 processors (8 cores) per cell. Memory was configured as 50% local and 50% interleaved.

The following config file entry was used to bind processes to cells using the HP-UX "mpsched" utility:
submit = let "MYNUM=$SPECCOPYNUM" ; let "LDOM=$MYNUM/8" ; mpsched -l $LDOM $command

**Base Compiler Invocation**

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

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

**Base Portability Flags**

- 400.perlbmk: -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,+p1,64M -Wl,-N
```

C++ benchmarks:
```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+p1,64M -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
```

Software Availability: Sep-2006
Hardware Availability: Sep-2006
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**SPEC CINT2006 Result**

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**Software Availability:** Sep-2006

**CPU2006 license:** 03
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**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/Smstheap.a`

- 473.astar: `+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/Smstheap.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/Smstheap.a`
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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

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.xml

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