



# CFP2000 Result

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IBM Corporation  
IBM System p5 520 (2100 MHz, 2 CPU)

SPECfp\_rate2000 = 73.4  
SPECfp\_rate\_base2000 = 71.6

SPEC license #: 11 | Tested by: IBM Austin | Test date: Jun-2006 | Hardware Avail: Aug-2006 | Software Avail: Aug-2006

Benchmark	Base Copies	Base Runtime	Base Ratio	Copies	Runtime	Ratio
168.wupwise	4	95.0	78.2	4	86.6	85.8
171.swim	4	183	78.4	4	183	78.4
172.mgrid	4	143	58.4	4	135	61.9
173.applu	4	172	56.5	4	192	50.7
177.mesa	4	150	43.3	4	151	42.9
178.galgel	4	106	127	4	91.6	147
179.art	4	37.8	319	4	35.1	344
183.equake	4	40.6	149	4	39.9	151
187.facerec	4	106	82.8	4	106	83.1
188.amp	4	249	41.1	4	248	41.1
189.lucas	4	136	68.0	4	137	67.7
191.fma3d	4	206	47.2	4	195	50.1
200.sixtrack	4	167	30.6	4	162	31.5
301.apsi	4	231	52.1	4	233	51.8

Hardware		Software	
CPU:	POWER5+	Operating System:	AIX 5L V5.3
CPU MHz:	2100	Compiler:	XL C/C++ Enterprise Edition Version 8.0 for AIX XL Fortran Enterprise Edition Version 10.1 for AIX Other Software: ESSL 4.2.0.4
FPU:	Integrated	File System:	AIX/JFS2
CPU(s) enabled:	2 cores, 1 chip, 2 cores/chip (SMT on)	System State:	Multi-user
CPU(s) orderable:	1,2 core		
Parallel:	No		
Primary Cache:	64 KB I + 32 KB D on chip per core		
Secondary Cache:	1920 KB I+D on chip per chip		
L3 Cache:	36 MB I+D off chip per chip, 1 chip per SUT		
Other Cache:	None		
Memory:	16 GB (8x2 GB)		
Disk Subsystem:	1x73GB SCSI, 15K RPM		
Other Hardware:	None		

## Notes/Tuning Information

### Portability Flags:

-qfixed used in: 168.wupwise, 171.swim, 172.mgrid, 173.applu,  
178.galgel, 200.sixtrack, 301.apsi  
-qsuffix=f=f90 used in: 178.galgel, 187.facerec, 189.lucas, 191.fma3d

### Base Optimization Flags:

Fortran: -O5 -lhmu -blpdata -lmass  
C: -qpdf1/pdf2  
-O5 -blpdata -qalign=natural

### Peak Optimization Flags

168.wupwise: -O5 -qsave -blpdata -lhmu -lmass  
171.swim: basepeak=1  
172.mgrid: -qpdf1/pdf2  
-O4 -qipa=partition=large -q64 -blpdata  
173.applu: -O5 -qarch=pwr3 -qtune=pwr3 -qalign=struct=natural -qfdpr -q64 -blpdata  
fdpr -q -O3



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## Notes/Tuning Information (Continued)

```

177.mesa:      -qpdf1/pdf2
               -O5 -qfdpr
               fdpr -q -O3
178.galgel:    -qpdf1/pdf2
               -O5 -qfdpr -qalign=struct=natural -lhmu -blpdata -lmass -qessl -lessl
               fdpr -q -O3
179.art:       -O5 -lhmu -blpdata
183.earthquake: -qpdf1/pdf2
               -O3 -qarch=auto -qtune=auto -qipa=level=2 -blpdata
187.facerec:   -O5 -qsave -blpdata
188.ammpp:     -O5 -qalign=natural -qfdpr -blpdata -lhmu
               fdpr -q -O3
189.lucas:     -O3 -qarch=auto -qtune=auto -qfdpr -blpdata -qessl -lessl
               fdpr -q -O3
191.fma3d:     -qpdf1/pdf2
               -O3 -qarch=auto -qtune=auto -qipa=level=2 -q64 -lhmu -blpdata -lmass
200.sixtrack:  -O3 -qarch=auto -qtune=auto -qfdpr
               fdpr -q -O3
301.apsi:      -O5

```

The installed OS level is AIX 5L for POWER Version 5.3 with the 5300-05 Recommended Technology Level.  
The installed C/C++ compiler is XL C/C++ Enterprise Edition Version 8.0 for AIX.  
The installed Fortran compiler is XL Fortran Enterprise Edition Version 10.1 with the May 2006 AIX PTF.

SMT: Acronym for "Simultaneous Multi-Threading". A processor technology that allows the simultaneous execution of multiple thread contexts within a single processor core. (Enabled by default)

SUT: Acronym for "System Under Test"

ESSL: Engineering and Scientific Subroutine Library

PTF: IBM identifier for "Program Fix Level"

```

ANSI C89:      IBM XL C for AIX invoked as xlc
Fortran 77:    IBM XL Fortran for AIX invoked as xlf90
Fortran 90:    IBM XL Fortran for AIX invoked as xlf90

```

ulimits set to unlimited.

Large page mode, memory affinity and MATMUL threading were set as follows:

```

vmo -r -o lpgg_regions=512 -o lpgg_size=16777216
chuser capabilities=CAP_BYPASS_RAC_VMM,CAP_PROPAGATE $USER
bosboot -aD
shutdown -rF
export MEMORY_AFFINITY=MCM
export XLFRTEOPTS=intrinthds=1

```

The following config-file entry was used to assign each benchmark process to a core:

```
submit = bindprocessor \$\$ \$SPECUSERNUM; $command
```

The "bindprocessor" AIX command binds a process to a CPU core.

This result was measured on an IBM System p5 510. IBM System p5 520 and IBM System p5 510 are electronically equivalent.