OMPM2001 Result

IBM Corporation

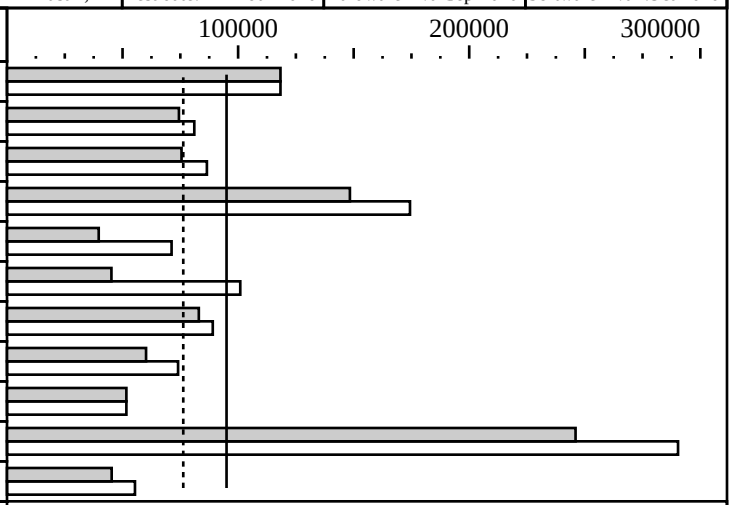
IBM Power 740 Express (3.55 GHz, 16 core, SLES)

SPECompMpeak2001 = 95002

SPECompMbase2001 = 76275

SPEC license #: HPG0005 | Tested by: IBM | Test site: Austin, TX | Test date: Jul-2010 | Hardware Avail: Sep-2010 | Software Avail: Oct-2010

Benchmark	Reference Time	Base Runtime	Base Ratio	Peak Runtime	Peak Ratio
310.wupwise_m	6000	50.7	118326	50.7	118326
312.swim_m	6000	80.6	74396	74.0	81042
314.mgrid_m	7300	96.7	75518	84.4	86492
316.applu_m	4000	27.0	148374	22.9	174364
318.galgel_m	5100	129	39686	71.6	71212
320.equake_m	2600	57.5	45187	25.8	100933
324.apsi_m	3400	41.0	82999	38.2	89032
326.gafort_m	8700	145	60169	118	74022
328.fma3d_m	4600	89.1	51656	89.1	51656
330.art_m	6400	26.0	246009	22.0	290355
332.ammp_m	7000	155	45289	126	55371



Hardware

CPU:	POWER7
CPU MHz:	3556
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 4 threads/core
CPU(s) orderable:	16 cores
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	4 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (32x8 GB) DDR3 1066 MHz
Disk Subsystem:	6x146.8 GB SAS SFF 15K RPM
Other Hardware:	None

Software

OpenMP Threads:	64
Parallel:	OpenMP
Operating System:	SUSE Linux Enterprise Server 11 SP1 (ppc64) Kernel 2.6.32.12-0.7-ppc64
Compiler:	IBM XL C/C++ for Linux, V11.1 IBM XL Fortran for Linux, V13.1
Other Software:	IBM Engineering and Scientific Subroutine Library for Linux on POWER, Version 5.1
File System:	ext3
System State:	Run level 3 (multi-user)

Notes/Tuning Information

```
Portability Flags Variables
  -qfixed used in: 310.wupwise_m, 312.swim_m, 314.mgrid_m, 316.applu_m, 324.apsi_m
  -qfixed=80 used in: 318.galgel_m
  -qsuffix=f=f90 used in: 318.galgel_m 326.gafort_m, 328.fma3d_m

Base Flags
   C:        -O5 -q64 -qhot=arraypad -Q -qsmp=omp
   FORTRAN:  -O5 -q64 -qhot=arraypad -Q -qsmp=omp

Base & Peak Environment Flags (unless noted differently below):
  OMP_NUM_THREADS = 32
  OMP_DYNAMIC=FALSE
  XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:PROCS=0,1,4,5,8,9,12,
  13,16,17,20,21,24,25,28,29, 32,33,36,37,40,41,44,45,48,49,52,53,56,57,60,61
  XLFRTEOPTS=intrinthds=1


Peak sources:
  SPEC OMPL2001 source for 32bit systems modified for SPEC OMPM2001 used
  with 312.swim_m, 316.applu_m, 320.equake_m, 326.gafort_m


Peak Flags
```

Notes/Tuning Information (Continued)

```
    -qsmp=omp used in all cases

    310.wupwise_m   basepeak=1
    312.swim_m:     -O3 -q32 -qpdf1/pdf2
                    XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                    OMP_NUM_THREADS = 16
    314.mgrid_m:    -O5 -q64 -qhot=arraypad
                    XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                    OMP_NUM_THREADS = 16
    316.applu_m:    -O3 -q32 -qpdf1/pdf2
                    -B/usr/share/libhugetlbfs/ -tl -Wl,--hugetlbfs-link=BDT
                    XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                    OMP_NUM_THREADS = 64
    318.galgel_m:   -O5 -q64 -qessl
                XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:PROCS=0,4,8,12,16,20,24,28
                    OMP_NUM_THREADS = 8
                    EXTRA_LIBS=-lesslsmp
    320.equake_m:   -O5 -q64 -qpdf1/pdf2
                    XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=4
                    OMP_NUM_THREADS = 16
    324.apsi_m:     -O5 -q64
    326.gafort_m:   -O5 -q32 -qhot=arraypad
                    XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                    OMP_NUM_THREADS = 64
    328.fma3d_m:    basepeak=1
    330.art_m:      -O5 -q64 -qhot=arraypad -Q -qpdf1/pdf2
                    XLSMPOPTS=SPINS=0:YIELDS=0:STACK=8000000:STARTPROC=0:STRIDE=1
                    OMP_NUM_THREADS = 64
    332.ammp_m:     -O5 -q32 -qhot=arraypad -Q
                    HUGETLB_MORECORE=yes
                    LD_PRELOAD=libhugetlbfs.so

C:              IBM XL C for Linux invoked as xlc_r
Fortran 90:     IBM XL Fortran for Linux invoked as xlf90_r

Use flags-description file IBM-20100816-Linux.txt

ulimit -s (stack) set to 1048576.

Large pages reserved as follows by root user:
  echo 480 > /proc/sys/vm/nr_hugepages
System configured with libhugetlbfs library for application access to large pages

Intelligent Energy Optimization enabled, up to 3.86 GHz
```