

# 1 Technique for submitting of batch jobs

## 1.1 Exposition of batch jobs software of ismaltx

Batch jobs software of ismaltx is using PBS (Portable Batch System) .

When you use PBS, you have to use PBS from ismaltx (ismaltx.ism.ac.jp).

Submitted job from ismaltx which send execution host is according to jobs classes.

## 1.2 QUEUE configuration

queue name	time restriction	memory limit (GB)	Max parallel	maximum jobs	maximum jobs (1 user)	Execution host	remarks
q8r	120H	48	8	4	2	ismaltix4	
q16r	120H	96	16	4	2	ismaltix4	
q32r	120H	192	32	2	1	ismaltix4	
q8	120H	64	8	4	2	ismaltix3	default queue
q16	120H	128	16	4	2	ismaltix3	
q32	120H	256	32	2	1	ismaltix3	
q32m	120H	512	32	1	1	ismaltix2	
q64	120H	512	64	2	1	ismaltix1 ismaltix2	
q1	120H	8	1	6	3	ismaltix3	
q1r	120H	8	1	6	3	ismaltix4	

## 1.3 Job script creation

### 1.3.1 Example for serially program

```
1 #!/bin/csh
2 #PBS -q q8
3 #PBS -m abe
4 #PBS -j oe
5 #PBS -l ncpus=1
6 cd /home0/sgi/prog1
7 dplace ./a.out
```

[#PBS] is not about comment but about PBS command.

Line 1: This line tells use shell script.

Line 2 : This line tells specify queue name.

Line 3 : This line tells want to receive e-mail when abort(a),start jobs(b) and finished jobs(e)

**If you don't specify this option, you don't receive PBS's notification by e-mail.**

Line 4 : This line tells merge standard output and standard error output into one file.

Line 5 : This line tells specify CPU's numbers (parallelism).

Line 6 : This line tells move to the appropriate directory which has executable file.

Line 7 : This line tells run the program.

**If you run process serially program, you would be better off using dplace command.**

### 1.3.2 Example for OpenMP program

```
1 #!/bin/csh
2 #PBS -q q8
3 #PBS -m ae
4 #PBS -j oe
5 #PBS -l ncpus=8
6 setenv OMP\_NUM\_THREADS 8
7 cd /home0/sgi/test1
8 dplace -x2 ./test_prog
```

Line 6 : This line tells specify environment variable of OpenMP. In addition specify parallelism.

Line 8 : This line tells run the program.

**If you run parallel program (OpenMP program), you have to specify dplace -x2 command.**

### 1.3.3 Example for MPI program

```
1 #!/bin/csh
2 #PBS -q q8
3 #PBS -m ae
4 #PBS -j oe
5 #PBS -l ncpus=8
6 cd /home0/sgi/test1
7 mpirun -np 8 dplace -s1 ./test_mpi < prog.dat
```

Line 7 : This line tells if you run MPI program, you have to use mpirun command.

In addition parallelism is specified after np option.

**If you run parallel program (MPI program), you have to specify dplace -s1 command.**

## 1.4 Submittig Batch Jobs

When you want to submit batch jobs, you use qsub command.

### 1.4.1 Example for qsub command

```
%cat subfile
#!/bin/csh
#PBS -q q8
#PBS -m ae
#PBS -j oe
#PBS -l ncpus=8
setenv OMP_NUM_THREADS 8
cd /home0/sgi/test1
dplace -x2 ./test_prog
%qsub subfile
10.ismaltx.ism.ac.jp
```

Please show Online manual (man qsub) particulars about qsub command.

## 1.5 PBS jobs status

When you want to show PBS jobs status, you use qstat command.

### 1.5.1 Example for qstat commnad

```
% qstat
```

Job ID	Username	Queue	Jobname	S	Elapsed Walltime	Elapsed Cputime	Cputime/ Walltime
171.ismaltx	sgi	q8	ISM_test	R	00:00:20	00:02:40	8.0

Job ID : PBS Job ID  
Username : user name  
Queue : PBS queue name  
Jobname : PBS job name  
S : PBS status  
Q : queuing  
R : running  
Elapsed Walltime : execution time  
Elapsed Cputime : execution CPU time

Cputime/Walltime : parallelism status

## 1.5.2 Delete jobs

When you delete jobs, you use qdel command.

```
% qdel job_ID
```