Submitting jobs and gettting listings

- Inputs and outputs
- Output (listing) delivery
- Soumet

input

- **A job (Korn shell or Posix shell script) to be processed on a specific machine, a « cluster » , or a machine that is a part of a specific group of equivalent machines.**

output

- **A listing (« standard output » + « standard error » produced in 1 or more concatenated parts) that is the product of job execution using a given batch control subsystem.**

Listing delivery

- **Where: a directory ($HOME/listings by default)**
- **Before: the user could choose which machine the listing would be sent back to (with some restrictions).**
- **NOW: the listing MUST be stored on the machine that processed the job.**

Name of the listing file

- **The listing will be stored in the listing delivery directory under the name:**
  job_name.ppid.seqno
  see options -jn -ppid and -seqno for the job name, unique identifier and sequence number.

The batch subsystems at CMC

- **NQS : SX5 kaze + yonaka, SX6 yata (will disappear soon)**
- **SGE (Sun Grid Engine) : SX6 yata, pollux, « graphical cluster » (new)**
- **PBS : the Linux machines belonging to MRB (5th floor)**
- **LoadLeveler : the new IBMmachine**
- **BATCH : the batch command under Linux (or UNIX)**

Soumet step by step

- **Usage :**
  soumet *job_script_name OPTIONS*
- ***job_script_name* : name of the file that contains the job commands (max 14 characters otherwise the job must be given a name with -jn *job_name*)**
  if *job_script_name is given as* –, the job commands will be read from « stdin ».

Soumet

- **Soumet is a script that prepares a job to be submitted by inserting appropriate Korn shell or Posix shell commands before and after the user commands that make up the job . These commands will vary with options, batch subsystem used and the target machine, cluster or group of machines.**

-mach [batch@]machine

- **Which machine, « cluster », or group of machines will process the job ? Which batch subsystem will be used ? By default, the job will be submitted to the local machine. batch may be nqs, pbs, sge, llv, bat. If batch is not specified, soumet will try to determine which batch is the right one for the specified execution target.**

-t numsec

- **CPU time necessary for job execution . For an MPI job under SGE, CPU needed by each MPI process. The default value is 20 CPU seconds.**

-cm nkB

- **Memory needed for job execution. The default value is 20MB.**

-cpus MxN

- **Necessary CPU configuration. In the case of a pure MPI or OpenMP job, one specifies -cpus N. If OpenMP threads are used within the MPI processes, one specifies -cpus MxN where M is the number of MPI processes and N the number of OpenMP threads within the MPI processes.**

-mpi

- **This is a job that uses MPI (pure or mixed with OpenMP). (see -cpus and -nodes)**

-jn job_name

- **Optional parameter specifying the job name (max 14 characters) if it differs from *job_script_name* or if the latter is longer than 14 characters.**

-ppid n

- **Part 2 of the listing file name. This parameter is optional and its default value is $$, which is the process number of the shell executing soumet. This part of the listing name is used as a unique identifier**

-seqno n

- **Part 3 of the listing file name. It represents the job sequence number. This parameter is optional and its default value is 1. This part of the listing name is used to identify the members of a cloned sequence.**

-clone

- **Prepare a cloned job. The following command**

  export SOUMET=qsub

  in the job stream will result in the submission of a clone (identical copy) of the current job at job completion.

-listing listing_directory

- **Directory that will receive the listing file at job completion. If the CRAYOUT environment variable is defined, its value will become the default value for this parameter, if not, $HOME/tmp will be used. This directory MUST EXIST on the machine where the job will be executed.**

-nosubmit

- **Do not submit (queue) the job file but produce a tar file called lajob.tar that will contain all the necessary ingredients for a later job submission using**

  soumet_lajob lajob.tar

  lajob.tar contains a job file and the necessary commands in order to submit the job to the proper place.

-cl class

- **Supplementary information about a specific « execution class » for the submitted job (this parameter is only used in very specific cases)**

-nec -noqsub -newtmp

- **Deprecated parameters. These parameters should not be used and are likely to be suppressed in later versions of soumet.**

Example 1

- **soumet majob -mach yata -t 3600 -cm 2G -jn yoyodyne -mpi -cpus 4**
- **Job majob will be executed on the SX6 (yata). This job uses MPI and needs 2 GB of memory. Each of the 4 MPI processes needs 3600 CPU seconds. The listing file will be called yoyodyne.$$.1 when it appears in the listing directory.**

Example 2

- **soumet ceci -mach pbs@turing -t 1800**
  -cm 130000
- **The job will be executed on machine turing and submitted to the PBS batch subsystem. The job needs 1800 CPU seconds and 130MB of memory.**

Example 3

- **soumet majob -mach llv@ibm-conv -t 1200 -cpus 4**
- **This is a job using OpenMP needing 4 threads and 1200 CPU seconds . The job will be executed on ibm-conv (IBM conversion machine) and submitted to the LoadLeveler batch subsystem.**