

Grizzly cluster anonymized job scheduling report record, 2021-2022

This data set is a report from the Slurm job accounting data base ("slurmdb") generated using the slurm accounting command ("sacct") with the command:

```
sacct -a -X -  
format="JobID%9,Priority,QOS,Partition,NNodes%6,Eligible%24,Start%24,End%24,T  
imelimit%24,State,Reservation,Flags%40,Account%32,User,Group,ConsumedEnergyRa  
w,NodeList%254"
```

Detailed documentation of the High Performance Computing (HPC) Scheduling software, Slurm, is available from <https://docs.schedmd.com>. Slurm is an HPC scheduler and resource manager, originally developed by Livermore Labs. It is used across the DoE TriLabs complex.

Data sets such as this, with the fields as below, are used to compare scheduling efficiency, as training data for scheduling simulations, and for signature comparison between different classes of workloads run on HPC systems. For example, these records have been used to distinguish human-in-the-loop interactive workflow from long-running scientific batch simulations and to tune schedulers to accommodate different mixtures of such jobs.

The fields included in this report are as follows. The explanation follows the documentation cited above.

- JobIDRaw
The identification number of the job or job step. Prints the JobID in the form JobID[.JobStep] for regular, heterogeneous and array jobs.
- Priority
The most-recently calculated priority of the job in the queue
- QOS
The name of the QOS, a field which constrains resources and/or time for the class of job
- Partition
Identifies the set of resources on which the job ran.
- Nnodes
NNodes Number of nodes in a job. If the job is running, or ran, this count will be the number allocated, else the number will be the number requested.
- Ntasks
NTasks Total number of tasks in a job
- Submit
The time the job was submitted.
- Eligible
When the job became eligible to run
- Start
Initiation time of the job
- End

Termination time of the job

- TimeLimit
Timelimit What the timelimit (the maximum requested time) was/is for the job
- State
the job status, or state. In the excerpt below, the jobs' states are as follows:
COMPLETED – the job ran to completion and exited with an exit code of 0 (zero)
TIMEOUT – the job ran to its time limit and was forced to exit
CANCELLED – the job was cancelled while running
- Reservation
If used, the associated reservation name for this job
- Flags
Any associated flags for this job. For this data set, these flags specify which scheduling cycle launched the job "Submit, Main, Backfill"
- NodeList
The set of nodes on which the job ran

The first few lines of the CSV formatted output is as follows:

```
"JobIDDraw","Priority","QOS","Partition","NNodes","NTasks","Submit","Eligible","Start","End","Timelimit","State","Reservation","Flags","NodeList"

"17950000","25840","standard","standard","4","","2021-12-07T15:31:22","2021-12-07T15:31:22","2021-12-07T15:31:22","2021-12-07T15:31:42","01:00:00","COMPLETED","PreventMaint","SchedSubmit","gr[1280-1283]"

"17950001","32469","standard","standard","1","","2021-12-07T15:45:01","2021-12-07T15:45:01","2021-12-07T15:56:31","2021-12-07T16:06:37","00:30:00","COMPLETED","","SchedMain","gr0694"

"17950002","89444","interactive","standard","1","","2021-12-07T16:04:21","2021-12-07T16:04:21","2021-12-07T16:04:21","2021-12-07T16:09:53","04:00:00","COMPLETED","","SchedSubmit","gr0695"

"17950003","66523","interactive","standard","1","","2021-12-07T16:10:09","2021-12-07T16:10:09","2021-12-07T16:10:09","2021-12-07T20:10:22","04:00:00","TIMEOUT","","SchedSubmit","gr0694"

"17950004","26041","standard","standard","1","","2021-12-07T16:15:01","2021-12-07T16:15:01","2021-12-07T16:15:01","2021-12-07T16:22:26","00:30:00","NODE_FAIL","","SchedMain"

"17950013","60847","standard","standard","18","","2021-12-07T16:47:56","2021-12-07T16:47:56","2021-12-07T16:47:56","2021-12-07T16:50:17","14:00:00","CANCELLED by 26656","","SchedMain","gr[1190-1207]"
```

sacct.out.grizzly.start=2021-12-07T00_00.no-identifiers.eligible.csv
