Partitions, QoS & Preemption

Each partition (or "pool") has several QoS tiers that determine job priority and preemption behavior. To see which partitions, accounts and QoS you can use, run `check_my_partitions` on the login node (see Finding Your Account and Partition).

QoS types

QoS	Purpose	Preempts	Can be preempted by
Share-type QoS (e.g. `0.125_48c_8g`, `0.75_48c_8g`)	For multi-owner pools; defines each owner's guaranteed slice (CPU/GPU portion).	`owner`, `public`	--
`owner`	Used on your lab's pool to run above your guaranteed slice (higher than `public`).	`public`	Share-type QoS
`public` (partition: `power-general-shared-pool`)	Used on cluster-wide shared pools for friendly or opportunistic runs.	--	`owner`, share-type QoS
`public` (partition: `power-general-public-pool`)	Used on a small, cluster-wide shared group of nodes. Not preemptable.	--	--

Preemption rules

Share-type QoS > `owner` > `public`

- A share-type QoS job can preempt `owner` or `public` jobs on the same pool.
- An `owner` job can preempt `public` jobs.
- `public` jobs cannot preempt any other jobs.

Billing and priority

Each user has a "billing" value, calculated from the amount of resources they request. When you ask for more memory, your billing increases.

Billing affects priority: users who asked for fewer resources in the past get higher priority in the future.

Submitting with the correct QoS

Below are examples of how to use each QoS tier with your account.

Owner QoS (on your lab's pool):

```
sbatch -A UIDHERE-users_v2 -p UIDHERE-pool --qos=owner --time=02:00:00 run.sh
```

Share-type QoS (on a multi-owner pool, for your guaranteed slice):

```
sbatch -A UIDHERE-users_v2 -p gpu-LAB1-LAB2-pool --qos=0.125_48c_8g --gres=gpu:A100:1 run.sh
```

Public QoS (friendly, cluster-wide):

```
sbatch -A public-users_v2 -p power-general-shared-pool --qos=public --time=01:00:00 run.sh
```

Small, protected CPU pool:

```
sbatch -A public-users_v2 -p power-general-public-pool --qos=public --time=01:00:00 run.sh
```

Handy checks

Monitor your jobs and see their QoS and pending reasons:

```
squeue --me -O "JOBID,ACCOUNT,PARTITION,QOS,STATE,REASON"
sprio -w
```

If your job was preempted, check:

```
sacct -j <jobid> --format=JobID,State,Reason
```

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