

Parameter	Description
<i>Number of reservations</i>	Default is 1 . This is called “ Aggressive Backfilling ” where only the first queued job receives a reservation. This can cause delays in execution of the other waiting jobs. The alternative is “ Conservative Backfilling ” where other waiting jobs are also allocated reservations. The number of reservations to allow is configurable by the administrator.
<i>Looseness of reservations</i>	This refers to a “ Selective Reservation ” strategy depending on the extent different jobs have been delayed by previous backfilling decisions. This is similar to “ Flexible Backfilling ” strategy where the backfilling is allowed to violate the reservation upto a certain slack.
<i>Order of Queued Jobs</i>	Usually FCFS order is used. An alternative is where the jobs are prioritized in some way and the scheduler picks the jobs according to this order including for backfilling. The factors on which priority could be calculated are: job characteristics, user, group, user priority, fairness, weight, duration etc.
<i>Partitioning of Reservations</i>	Machine is divided into several disjoint partitions with the freedom to move around idle processors dynamically based on current needs. Each partition is associated with its own job class, runtime limit for jobs, wait-queue and reservation. Backfilling candidate is chosen in a round-robin fashion, each time from a different partition respecting the reservations.
<i>Adaptiveness of Backfilling</i>	Simulates the execution of recently submitted jobs under various scheduling disciplines and switches the algorithm to the ones which gives the highest performance.
<i>Lookahead into the queue</i>	Default behavior is to consider the queued jobs one at a time that may lead to loss of resources. Alternative is to look at a window jobs at a time and pick a mapping that gives the maximum utilization but respects all the reservations.
<i>Speculative Backfilling</i>	The Scheduler is allowed to backfill jobs even if it interferes with an existing reservation as it speculates that the job will finish earlier than estimated time.
<i>Minimize the electric power demand</i>	The current direction of research in job scheduling is targeted towards power efficient exascale HPC systems. Scheduling decisions will have to be made considering power constraints of the machine, power stability, energy efficiency.