# Machine Failure Model

|  |  |
| --- | --- |
| Parameters m = # machines  s = # repair people  = times to Failure  = times to Repair | State Variables F = # failures (0)  R = # available repair people (s) |

## Event Graph



## Notes

* The EndRepair-Failure scheduling edge is crucial for ensuring that repaired machines do eventually fail again
* The condition on the EndRepair-StartRepair edge *cannot* be F > 0 with F defined as the number of failed machines.
* If F < s, then following a repair, all failed machines will also be in-repair.

# Batch Arrivals

|  |  |
| --- | --- |
| Parameters  * {tA} = interarrival times * *k* = # servers * {tS}= service times * {*B*} = sizes of batches | State Variables  * Q = # in queue (0) * S = # available servers (k) |

## Event Graph



## Notes

* The self-scheduling edge on StartService is necessary. If it is not present, then the arrival of a batch size greater than 1 (when k > 1) will result in Q > 0 and S > 0.
* In other words, StartService events must be scheduled immediately until either Q = 0 or S = 0.