CMPE 230 Class Project

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Overview

- Fork/Join model.
- Create Markov Continuous-Time transition matrix with three degrees.
  - Number in “fastest”, “slowest” and join queues.
  - Estimate completions from intermediate servers via *m-Erlang* distributions.
- Solve *Q* matrix via LU decomposition and equation substitution.

State Example

- Only track 3 queues
  - Smaller dependence on number of servers.
  - Only 5 transitions in Markov chain. Low number of equations.

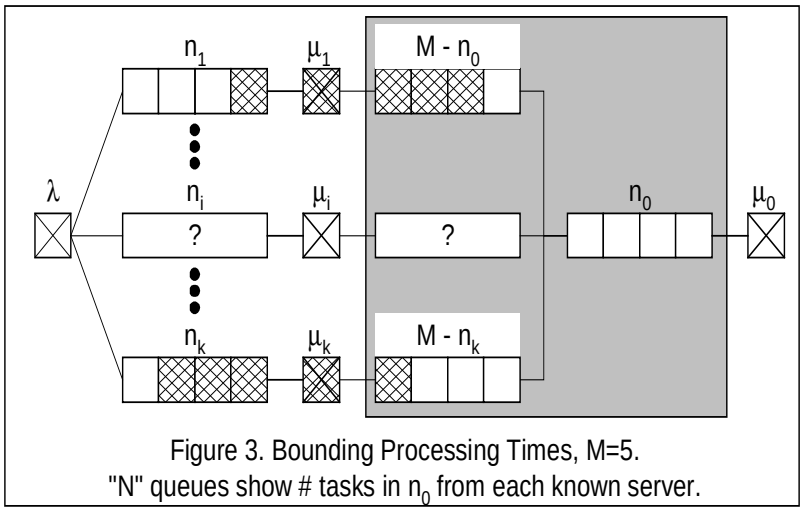
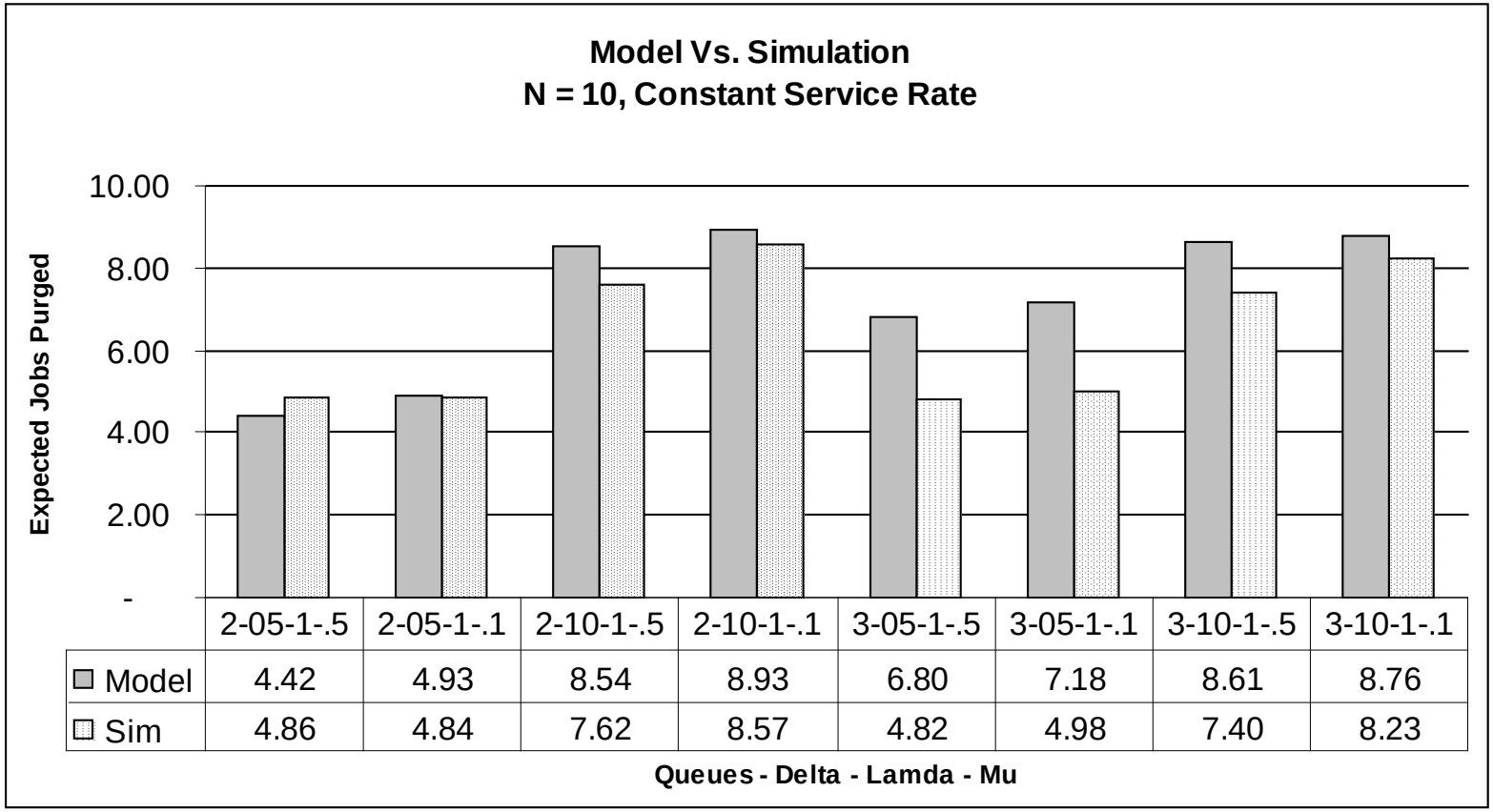
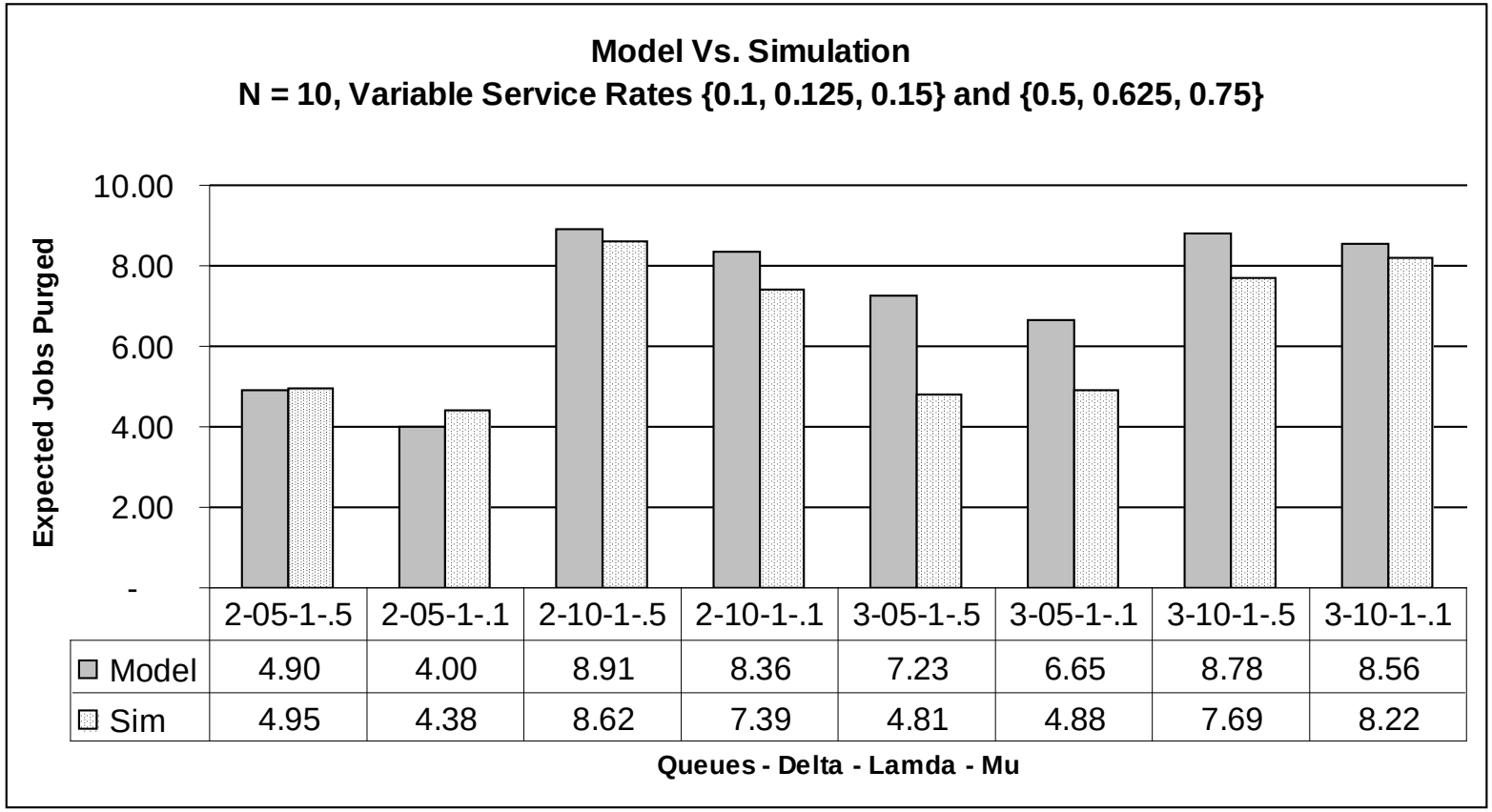


Figure 3. Bounding Processing Times, M=5.
"N" queues show # tasks in n_0 from each known server.

Results vs. Simulation I



Results vs. Simulation II



	2-05-1-.5	2-05-1-.1	2-10-1-.5	2-10-1-.1	3-05-1-.5	3-05-1-.1	3-10-1-.5	3-10-1-.1
Model	4.90	4.00	8.91	8.36	7.23	6.65	8.78	8.56
Sim	4.95	4.38	8.62	7.39	4.81	4.88	7.69	8.22