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**Results**

**Buffer at 20 Phi .4**

|  |  |
| --- | --- |
| Average Queue Time | .10631 |
| Average Processing Time | .20158 |
| Average Total Time | 0.30789 |
| Average Queue Time 1 | 0.03481 |
| Average Queue Time 2 | 0.07146 |
| Average Processing Time 1 | 0.08015 |
| Averaging processing Time 2 | 0.001161 |
| Blocking Probability 1 | 0 |
| Blocking Probability 2 | 0 |
| Average Number in Queue 1 | 0.1358 |
| Average Number in Queue 2 | 0.4641 |
| Average Number in System | 1.6981 |

**Buffer at 20 Phi .5**

|  |  |
| --- | --- |
| Average Queue Time | 0.100233 |
| Average Processing Time | 0.199445 |
| Average Total Time | 0.299678 |
| Average Queue Time 1 | 0.050278 |
| Average Queue Time 2 | 0.049864 |
| Average Processing Time 1 | 0.099578 |
| Averaging processing Time 2 | 0.001443 |
| Blocking Probability 1 | 0 |
| Blocking Probability 2 | 0 |
| Average Number in Queue 1 | 0.34 |
| Average Number in Queue 2 | 0.32 |
| Average Number in System | 1.6633 |

**Buffer at 20 Phi .6**

|  |  |
| --- | --- |
| Average Queue Time | 0.10038 |
| Average Processing Time | 0.2 |
| Average Total Time | 0.30439 |
| Average Queue Time 1 | 0.0677 |
| Average Queue Time 2 | 0.0361 |
| Average Processing Time 1 | 0.1202 |
| Averaging processing Time 2 | 0.00174 |
| Blocking Probability 1 | 0 |
| Blocking Probability 2 | 0 |
| Average Number in Queue 1 | 0.4695 |
| Average Number in Queue 2 | 0.2423 |
| Average Number in System | 1.7099 |
|  |  |

**Buffer at 5 Phi .6**

|  |  |
| --- | --- |
| Average Queue Time | 0.09985 |
| Average Processing Time | 0.19747 |
| Average Total Time | 0.29733 |
| Average Queue Time 1 | 0.06483 |
| Average Queue Time 2 | 0.03482 |
| Average Processing Time 1 | 0.12831 |
| Averaging processing Time 2 | 0.0017 |
| Blocking Probability 1 | 0.00463 |
| Blocking Probability 2 | 7.5361 |
| Average Number in Queue 1 | 0.04332 |
| Average Number in Queue 2 | 0.2375 |
| Average Number in System | 1.6542 |

**Buffer at 5 Phi .5**

|  |  |
| --- | --- |
| Average Queue Time | 0.1015 |
| Average Processing Time | 0.1993 |
| Average Total Time | 0.3008 |
| Average Queue Time 1 | 0.0501 |
| Average Queue Time 2 | 0.05145 |
| Average Processing Time 1 | 0.09968 |
| Averaging processing Time 2 | 0.001144 |
| Blocking Probability 1 | 0.0022 |
| Blocking Probability 2 | 0.00255 |
| Average Number in Queue 1 | 0.3398 |
| Average Number in Queue 2 | 0.331835 |
| Average Number in System | 1.684 |

**Buffer at 5 Phi .4**

|  |  |
| --- | --- |
| Average Queue Time | 0.10063 |
| Average Processing Time | 0.1982 |
| Average Total Time | 0.2988 |
| Average Queue Time 1 | 0.0346 |
| Average Queue Time 2 | 0.06592 |
| Average Processing Time 1 | 0.0792 |
| Averaging processing Time 2 | 0.0011 |
| Blocking Probability 1 | 0.00104 |
| Blocking Probability 2 | 0.005188 |
| Average Number in Queue 1 | 0.2249 |
| Average Number in Queue 2 | 0.43848 |
| Average Number in System | 1.6456 |

**Additional Questions**

1. Phi Changes how many packets go to the individual server. Therefor if less packets go to the server the less they are likely to be blocked, the average number of objects in queue and time in the queue is lessened.
2. As you increase the buffer size packets are more likely to spend a higher average time in the queues of both servers. Also, less items tend to be blocked with higher queues. Since more time on average is spent in the queues there is a higher packet average in the system.
3. The highest throughput is the .5 phi and 20 buffer. This is because the packets are evenly distributed between the two servers and the buffer is much higher resulting in a lower blocking probability.