

Calculating Service Time

COMP755

Available Data

- For most of the performance problems in COMP755, we assumed we knew the service time for each device
- Performance monitors do not know device service times
- Performance monitors usually measure the average size of a devices queue

Using Queuing Theory

- The average size of a device's queue is represented by the letter W
- For an M/M/1 queue

$$W = \frac{\rho^2}{1 - \rho}$$

- The performance monitor data gives us the average arrival rate, λ , for each device and we know W
- We can calculate the service time, S

Using Algebra

- Note that $\rho = \lambda s$

$$W = \frac{(\lambda s)^2}{1 - \lambda s}$$

- We can solve for s

$$s = \frac{-w \pm \sqrt{w^2 + 4w}}{2\lambda}$$