

P8.

a) it can support 20 users

b) $P = 0.1$ c) $\binom{120}{n} P^n (1-P)^{120-n}$

d) use central limit theorem

$$P(\geq 21 \text{ or more users}) = 1 - P\left(\sum_{j=1}^{120} X_j \leq 21\right)$$

$$P\left(\sum_{j=1}^{120} X_j \leq 21\right) = P\left(\frac{\sum_{j=1}^{120} X_j - 12}{\sqrt{120 \cdot 0.1 \cdot 0.9}} \leq \frac{9}{\sqrt{120 \cdot 0.1 \cdot 0.9}}\right)$$

$$\approx P(Z \leq 2.74)$$

$$= 0.997$$

$$P(\geq 21 \text{ or more users}) = 0.003$$

P9

a) it can support 10000 users at most at the same time.

b) the probability formula: $\sum_{n=N+1}^M \binom{M}{n} P^n (1-P)^{M-n}$

P10

$$d_{\text{end-end}} = L/R_1 + L/R_2 + L/R_3 + d_1/s_1 + d_2/s_2 + d_3/s_3 + d_{\text{proc}} + d_{\text{proc}}$$

For these values: $d_{\text{end-end}} = 64 \text{ msec}$ 