ឈ្មោះ: ពួន វីរៈរិទ្ធ - Pun Vireakroth

Question 1 How did we get the value 0.0004?

- Link 1Gb/s = 1000 Mb/s
- User : Each user use 100Mb/s when active
- Each user active 10% of the time
- Circuit switching 10 users ative at the same time
- Packet switching: 35 users, calculate propbability of user active > 10 users at the same time

We have

- $P = 0.1$ as user who active independently
- $N = 35$ number of users

$$P(k \text{ active}) = \binom{N}{k} p^k (1-p)^{N-k}$$

Where

- $N = 35$
- $P = 0.1$
- k = is the number of user active

Comulative probability

P(more than 10 users active) = 1 - P(10 or fewer user active)

=> P(10 or fewer user active)

$$\Rightarrow P(k \leq 10) = \sum_{k=0}^{10} \binom{35}{k} (0.1)^k (0.9)^{35-k}$$

$$\approx 0.9996$$

Therefore P(more than 10 users active) = 1 - 0.9996 = 0.0004

Question 2 What happen if > 35 users?

As user increase beyond 35 the probability having more than 10 active at the same time also increase.