t08902109 賈成鍇 network hw2

1\. a. circuit-switched network

A circuit-switched network keep the connection reserved for the duration of the transfer. while packet-switched network does not reserve a connection.

The packet-switched also has to allocate resources on demand. and maybe have to wait for a connection.

b. No. is not needed.

because application data rates is less than the capacities, packet-switching's downfall will not happen.

But when the network is worked under capacity,

we need to do this.

2\. a. 3 Mbps / 150 kbps = 20

thus: 20 users can be supported.

b. the probability is 0.1

c.

probability: $C_{120}^{n}(0.1)^{n}(0.9)^{120-n}$

d.

$$P = C_{120}^{21}(0.1)^{21}(0.9)^{79} + C_{120}^{22}(0.1)^{22}(0.9)^{78} + \cdots + C_{120}^{119}(0.1)^{119}(0.8)^{1} + C_{120}^{120}(0.1)^{120}$$

$$= 0.00794$$

Thus the probability is 0.00794

thus: the probability is 0.00177

3. a. $d_{prop} = m / s$

b. $d_{trans} = L / R$

c. $d_{nodal} = d_{prop} + d_{trans} = \frac{m}{s} + \frac{L}{R}$

d. Host A

$d_{trans}$ is the time to transmit a whole packet.

so at time $= d_{trans}$, the packet still at Host A.

e. first bit has moved t time at the speed s meters/sec.

thus. it at the distance $s * d_{trans}$.

f. At Host B

as (e). the first bit has moved beyond m meters,

so it would be at destination.

g. $d_{trans} = \frac{L}{R}$ $d_{prop} = \frac{m}{s}$

make: $\frac{L}{R} = \frac{m}{s}$. thus $m = 5.357 \times 10^{5}$ meter。

4. a. network. link. physical

b. link physical

c. application transport network link physical