Faculty of Computer Science & IT

Fall 2011 Midterm 02

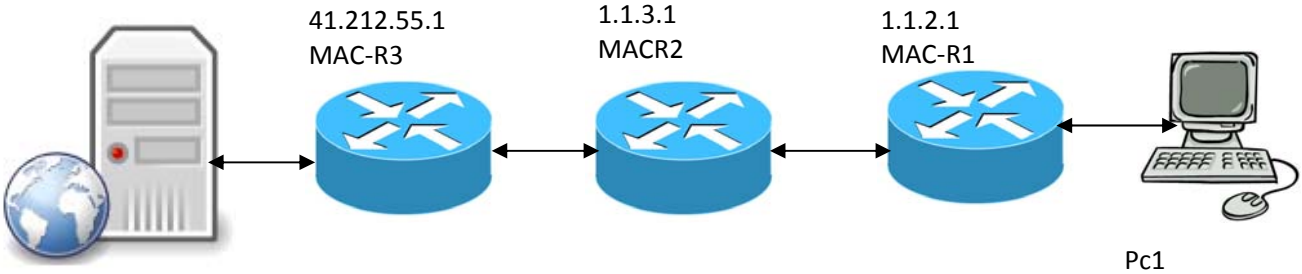
Course name: Network I
Course Code: CNE 304
Lecturer: Dr. Ahmed ElShafee

Exam number: Model Answer
Exam Date: 27/12/2011
Time Allowed: 90 minutes

Name: _____
ID: _____

1	2	3	4	5	6	Total
/5	**/5**	**/5**	**/5**	**/5**	**/5**	**/30**

1.



www.site.com
port: 80
41.212.55.78
MAC2

Pc1
Port: 1589
49.52.35.5
MAC1

Consider PC1 sending request to www.site.com, packet received by R2 will contains

	Network Access layer header	IP header	TCP header	Data	Tale
Source	MAC-R1	49.52.35.5	1589		
Destination	MAC-R2	41.212.55.78	80		

Consider PC1 sending request to www.site.com, packet sent by R2 will contains

	Network Access layer header	IP header	TCP header	Data	Tale
Source	MAC-R2	49.52.35.5	1589		
Destination	MAC-R3	41.212.55.78	80		

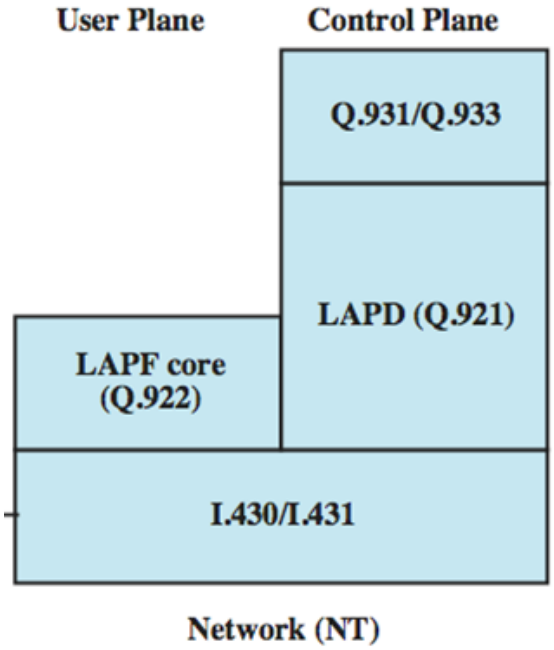
Consider www.site.com sending reply to Pc1, packet received by R1 will contains

	Network Access layer header	IP header	TCP header	Data	Tale
Source	MAC-R2	41.212.55.78	80		
Destination	MAC-R1	49.52.35.5	1589		

Consider www.site.com sending reply to Pc1, packet sent by R1 will contains

	Network Access layer header	IP header	TCP header	Data	Tale
Source	MAC-R1	41.212.55.78	80		
Destination	MAC1	49.52.35.5	1589		

2.

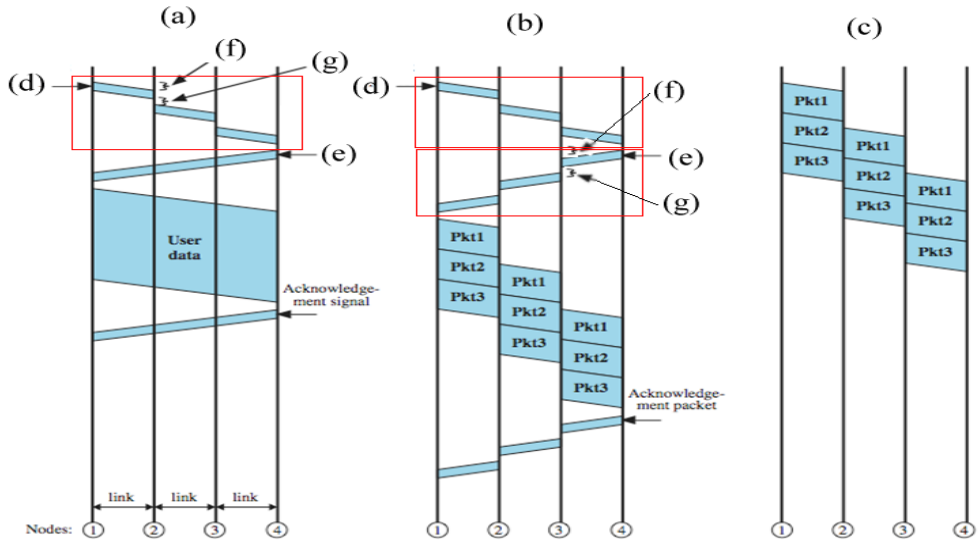


The above figure presents shows frame relay protocol architecture for network terminals. State the function of Q.931/Q.933 layer in control plan. Then briefly discuss the differences in protol acrchitecture in each plane (from functionality point of view).

Control plan: provide reliable transfer of control packets by sending acknowledgment for each received packet

Data plan: ignore that function as depends on acknowledgment send be end

3.



The figure shows three different approaches in switching techniques.

a. Name the three different approaches

"A"	Circuit switching
"B"	Virtual ciruit
"C"	Data gram

b. approach "a" looks like approach "b" except

1. dividing data into packets
2. add delay "g"

Discuss?

Circuit switching:

- send data as one stream and channel is fully dedicated for communication task
- no routing decision taken by nodes, so there is no node delay

virtual circuit

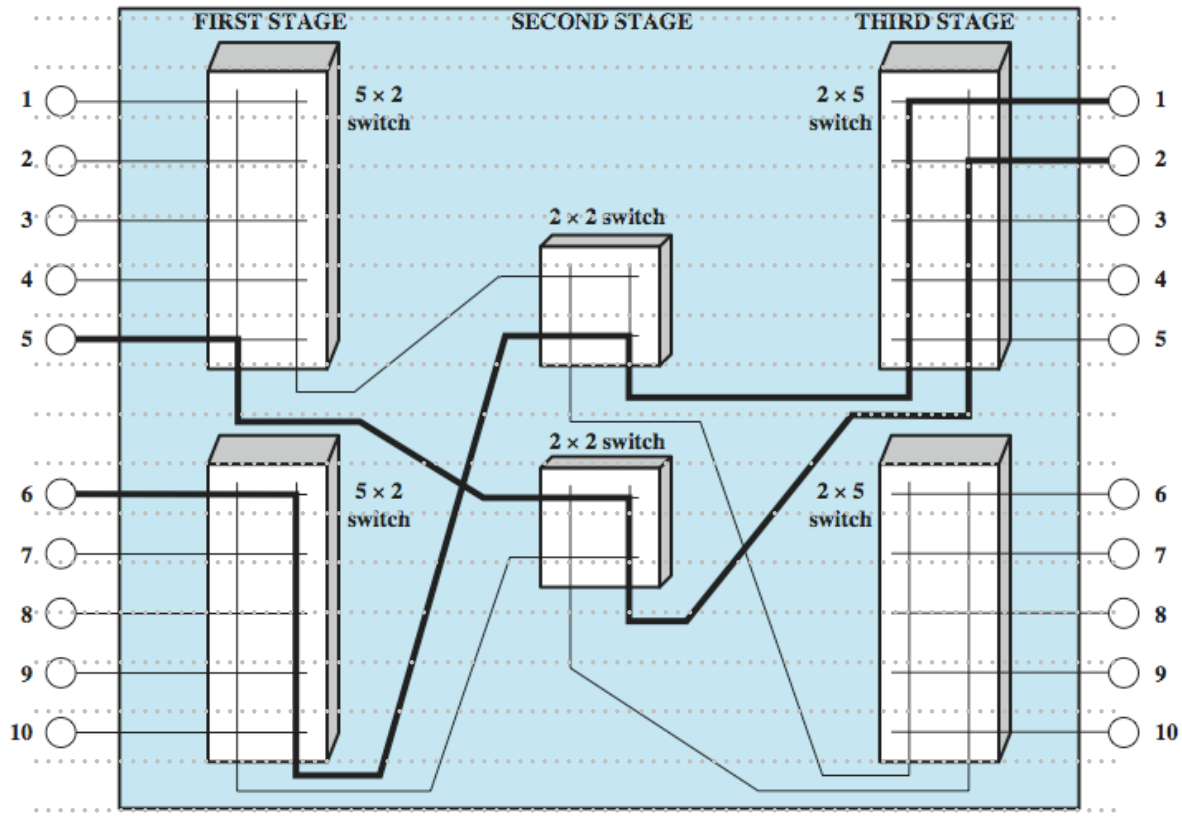
- divide data into packets in order to share network resources between different communication sessions
- each node buffers packets then forward it to next node (sharing strategy) which called node delay

4. draw a multi stage switch havignthe following feature. Then calculate blocking probaility.

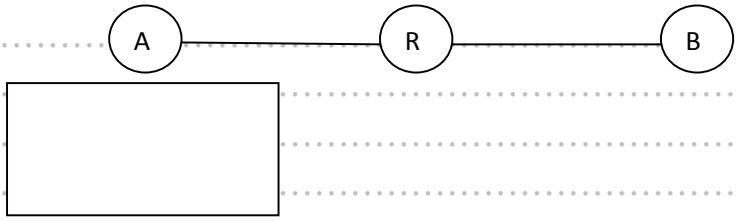
a. has 20 input/output lines

b. the first and third stage contian 5x2 sub-switch

c. second stage contains 2x2 switches



5. Host A wants to send a 1 Mbyte packet to Host B. The propagation speed of bits is $2x10^8$ m/s. Assume that A and B are connected via a router R. Link AR connects A to R, and link RB connects R to B. Link AR is 1 km long and link RB is 2 km long. Suppose the capacity of each of the two links is 10 Mbytes/s and the processing delay at the Router (R) is 10 ms. After how much time will host B receive the packet. Note that Router (R) must receive the whole packet before being able to forward it.



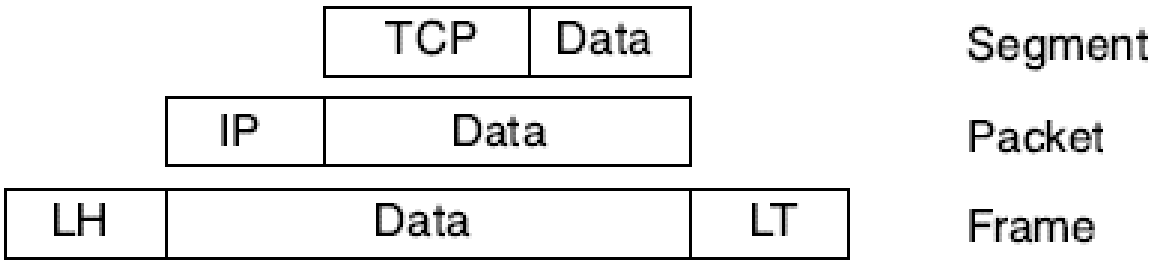
Delay = $D_{AR} + D_R + D_{RB}$

D_{AR} = propagation delay + transmission delay = $1000/(2x10^8) + 1/10 = 0.100005$ s

$D_R = 0.01$ s

D_{RB} = propagation delay + transmission delay = $2000/(2x10^8) + 1/10 = 0.10001$ s

Delay = 0.100005 + 0.01 + 0.10001 = 0.210015 s



6. Figure shows the data encapsulation process. The network access layer is the only layer that adds tale to encapsulated data. Discuss.

Because network access layer do mathematical operation on data into frame, is result the same as tale, its considered to be correct packet and forward it to next node, if not discard packet.