EE 450

HW #3

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Ch6

P18

A begins transmitting at $t=0$

In the worst case, B begins transmitting at $t=324$ (before A's first bit arrived)

B's first bit arrives A at $t=324+325=649$.

where A detects collision.

↱ A finishes transmission

$\Rightarrow$ $512+64 < 649$

↳ A detects collision

$\Rightarrow$ Yes. A can finish transmitting before it detects collision. In the worst case, at $t=649$, B's signal reaches A.

Ch 6

P.9 The time table is as follow.

Time	node A	node B
0	starts to transmit	starts to transmit
245	B's first bit arrives ⇒ collision detected	A's first bit arrives ⇒ collision detected
293 (245+48)	finishes transmitting jamming signal	finishes transmitting jamming signal
538 (293+245)	all bits arrive ⇒ detects idle	all bits arrive
634 (538+96)	starts to retransmit	
805 (293+512, K_b = 1)		retransmission scheduled
879 (634+245)		A's first bit arrives ⇒ wait until idle

(1) at t = 805

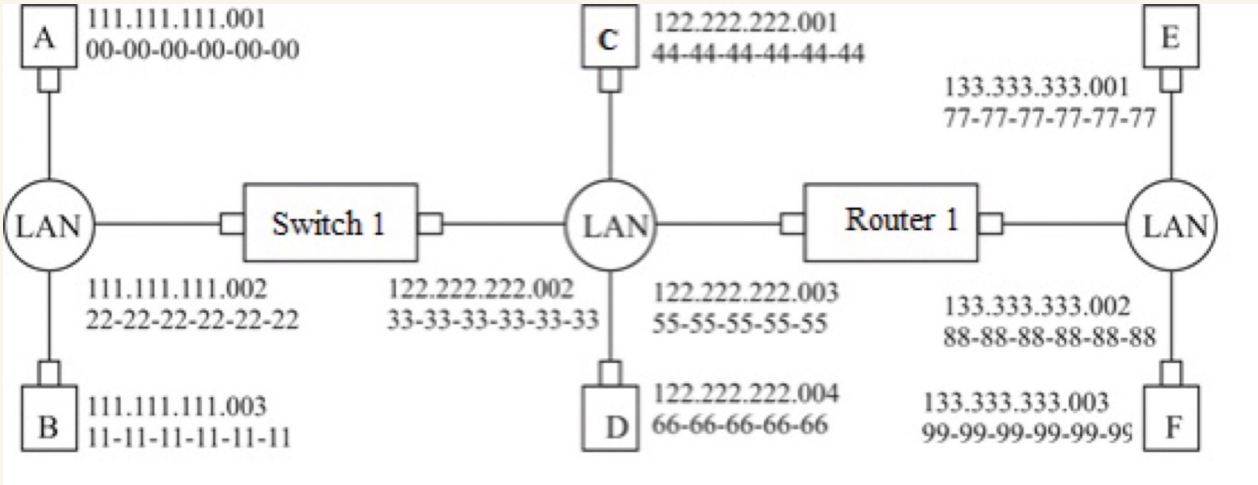
(2) A begins transmission at t = 634

(3) at t = 879, A's signal reach B

(4) Yes. B should wait for additional 96 bit times before transmitting (805 + 96), while B detects that A is transmitting at t=879.

Ch 6

P22 Assume the Mac addr. and IP addr. of each node is as follow.



A → switch → Router → F

(i) source Mac address: 00-00-00-00-00-00 (A)
destination Mac address: 55-55-55-55-55-55 (Router)
source IP address: 111.111.111.001 (A)
destination IP address: 133.333.333.003 (F)

(ii) source Mac address: 00-00-00-00-00-00 (A)
destination Mac address: 55-55-55-55-55-55 (Router)
source IP address: 111.111.111.001 (A)
destination IP address: 133.333.333.003 (F)

(iii) source Mac address: 88-88-88-88-88-88 (Router)
destination Mac address: 99-99-99-99-99-99 (F)
source IP address: 111.111.111.001 (A)
destination IP address: 133.333.333.003 (F)

Ch 6

P23

Total # of nodes = 9 + 2 = 11

The maximum total aggregate throughput

= 1 x 11

= 11 Gbps *

Ch6

P24.

Since each departmental hub is a collision domain that have maximum 1Gbps throughput, there are 5 collision domains in total.

⇒ Total aggregate throughput

= 1 × 5 ← 3 departments + 2 server

= 5 Gbps. ✱

Ch6

P25

All the end systems are in one collision domain

$\Rightarrow$ total aggregate throughput = 1 Gbps *

Ch6

P26.

the Mac addr of one node and its interface

Action	Table	mode	explanation
B→E	B	Flooding	forward the frame to all nodes
E→B	B·E	Forwarding	forward the frame to B
A→B	A·B·E	Forwarding	forward the frame to B
B→A	A·B·E	Forwarding	forward the frame to A

The table was initially empty.

Ch 7

P5 a. No. The 802.11 will not completely break down since every AP has different Mac address and SSID. When two stations attempt to transmit at the same time in the same channel, there will be a collision.

b. If two stations transmit at the same time in different channels, there will not be a collision.