

CprE 489

Homework 4

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1a) The vulnerable period covers t'_0 **-7X through t'_0 +1.4X**. The transmission must have one clear slot before t'_0 and two clear slots afterward in order to completely fit. Thus the vulnerable period spans 2.1X.

1b) Max propagation is through 2 repeaters and 2 segments \Rightarrow
$$t_{prop} = 2(1.5\mu s) + 2(100m / (2 \cdot 10^8 m/s)) = 3\mu s + 1\mu s = 4\mu s.$$

This must be multiplied by 2 to ensure the transmitting end receives any response, so frame size = $8\mu s$.

2)

(a) $205.63.130.1 \text{ AND } /16 = 205.63.0.0$ $205.63.130.1 \text{ AND } /18 = 205.63.128.0$
 $205.63.130.1 \text{ AND } /21 = 205.63.128.0$

None of these results match any of the destinations listed in the table, so the table will use the default and send the packet to 205.36.1.1

(b) $205.36.140.2 \text{ AND } /16 = 205.36.0.0$ $205.36.140.2 \text{ AND } /18 = 205.36.128.0$
 $205.36.140.2 \text{ AND } /21 = 205.36.136.0$

Results 2 and 3 match their respective destinations in the table, so as destination 3 has a larger subnet, we send the packet to 205.36.136.1

(c) $205.36.150.3 \text{ AND } /16 = 205.36.0.0$ $205.36.150.3 \text{ AND } /18 = 205.36.128.0$
 $205.36.150.3 \text{ AND } /21 = 205.36.144.0$

Only result 2 matches its respective destination, so we send the packet to 205.36.128.1

- 3) We can divide the given 255 hosts into 3 groups: 96, 96, and 64.
Both groups of 96 must be divided into 2 groups: 64 and 32
This leaves us with the table below:

Department	IP	Size
D1	200.120.80.192 /26	64
D2	200.120.80.0 /26	64
	200.120.80.64 /27	32
D3	200.120.80.96 /26	64
	200.120.80.160 /27	32