**CSMA/CD**

3) Given that A and B choose different K's, the larger the difference – the bigger isolation between A and B operation times. So we will prove that even for the smallest margin (For example KA=0 and KB=1) the re-transmissions do not collide.

|  |  |  |
| --- | --- | --- |
| Time [bit times] | A | B |
| 0 | Begins transmission | Begins transmission |
| 255 | Detects collision, stops transmission and sends J-bits jam signal\* | Detects collision, stops transmission and sends J-bits jam signal\* |
| 255+J | Finishes transmitting jam signal | Finishes transmitting jam signal, waits for 512 bit times |
| (255+J)+255=510+J | B's last bit arrives, detects an idle channel and listens for 96 bit times |
| (510+J)+96=606+J | Begins re-transmission |
| (255+J)+512=767+J | Listens for 96 bit times |
| (606+J)+255=861+J | A's first bit arrives when B is still in listening mode, resets the "listening clock" |

\* Remember J is usually 36-48 bits.

When A's message is fully received at B, B will detect an idle channel, wait 96 more bit times (listening mode) and then re-transmits its message to A successfully.

No collision! Great success!

4)

Prop. delay = Cable length / Speed of signal = 250 / 250,000K = 1 us

Round trip time = 2 \* Prop. delay = 2 us

**Minimal frame size = Bandwidth \* Round trip time = 100M \* 2u = 200 bits**