

Initialization: Transmitting with the highest bit-rate

Random Sampling:

1. Randomly use a bit-rate which is different from the current used one to send the packet
2. The following types of bit-rate should not be used for sampling
 - a. The average lossless transmission time is greater than the average transmission time of the current bit-rate

The lossless transmission time, i.e., transmission without retry, and the transmission time can be calculated by

$tx_time(b, r, n) = difs + backoff(r) + (r + 1) * (sifs + ack + header + (n * 8/b))$, where

b = bit-rate

r = number of retries

n = packet size

difs = 50 microseconds

sifs = 10 microseconds

ack = 304 microseconds

header = 192 microseconds

backoff(1) = 155 microseconds

backoff(2) = 315 microseconds

backoff(3) = 635 microseconds

backoff(4) = 1275 microseconds

backoff(5) = 2555 microseconds

backoff(6) = 5115 microseconds

backoff(7) = 5115 microseconds

backoff(8) = 5115 microseconds

In this project, we fix the packet size at 1500 bytes