

Example: Impact of Bit Error Rate

$n_f=1250$ bytes = 10000 bits, $n_a=n_o=25$ bytes = 200 bits

Find efficiency for random bit errors with $p=0, 10^{-6}, 10^{-5}, 10^{-4}$

$$1 - P_f = (1 - p)^{n_f} \approx e^{-n_f p} \text{ for large } n_f \text{ and small } p$$

	Delay × Bandwidth Product Efficiency			
Bit error p	0	10^{-6}	10^{-5}	10^{-4}
1 Mbps at 1 ms	1 88%	0.99 86.6%	0.905 79.2%	0.368 32.2%

Bit errors impact performance as $n_f \times p$ approaches 1