

CMPT434 ~ ASSIGNMENT 1

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$$1) \text{ Packetization delay} = \frac{100 \text{ bytes} \times 8 \text{ bits/byte}}{6 \times 10^9 \text{ bits/sec}} = 0.1667 \times 10^{-6} \text{ sec} \\ = 0.1667 \mu\text{s}$$

fixed processing delay:

$$0.8 \times 10^{-9} \text{ bytes/sec} \times 100 \text{ bytes} = 0.08 \times 10^{-6} \text{ sec} = 0.08 \mu\text{s}$$

OCN:

$$\text{processing delay} = 0 \text{ sec} + 0.08 \times 10^{-6} \text{ sec} = 0.08 \mu\text{s}$$

$$\text{propagation delay} = \frac{0.5 \times 10^{-2} \text{ m}}{2 \times 10^8 \text{ m/sec}} = 2.5 \times 10^{-11} \text{ sec} = 25 \text{ ps}$$

$$\text{packet delay} = 0.1667 \times 10^{-6} \text{ sec}$$

$$\text{total delay} = 0.08 \times 10^{-6} \text{ sec} + 2.5 \times 10^{-11} \text{ sec} + 0.1667 \times 10^{-6} \text{ sec} \\ = 2.46725 \times 10^{-7} \text{ sec} = 0.246725 \mu\text{s}$$

$$\text{propagation proportion} = \frac{2.5 \times 10^{-11} \text{ sec}}{2.46725 \times 10^{-7} \text{ sec}} = 1.01327 \times 10^{-4}$$

SAN:

$$\text{processing delay} = 0.6 \times 10^{-6} \text{ sec} + 0.08 \times 10^{-6} \text{ sec} = 0.68 \mu\text{s}$$

$$\text{propagation delay} = \frac{5 \text{ m}}{2 \times 10^8 \text{ m/sec}} = 2.5 \times 10^{-8} \text{ sec} = 25 \text{ ns}$$

$$\text{packet delay} = 0.1667 \times 10^{-6} \text{ sec}$$

$$\text{total delay} = 8.717 \times 10^{-7} \text{ sec} = 0.8717 \mu\text{s}$$

$$\text{propagation proportion} = \frac{2.5 \times 10^{-8} \text{ sec}}{8.717 \times 10^{-7} \text{ sec}} = 2.86796 \times 10^{-2}$$

LAN:

$$\text{processing delay} = 6 \times 10^{-6} \text{ sec} + 0.08 \times 10^{-6} \text{ sec} = 6.08 \times 10^{-6} \text{ sec} = 6.08 \mu\text{s}$$

$$\text{propagation delay} = \frac{5000 \text{ m}}{2 \times 10^8 \text{ m/sec}} = 2.5 \times 10^{-5} \text{ sec} = 25 \mu\text{s}$$

$$\text{packet delay} = 0.1667 \times 10^{-6} \text{ sec}$$

$$\text{total delay} = 31.2467 \mu\text{s}$$

$$\text{propagation proportion} = 0.806452$$

Nilroy

WAN:

$$\text{processing_delay} = 60 \times 10^{-6} \text{sec} + 0.08 \times 10^{-6} \text{sec} = 60.08 \mu\text{s}$$

$$\text{propagation_delay} = \frac{5000 \times 10^3 \text{m}}{2 \times 10^8 \text{m/s}} = 0.025 \text{sec}$$

$$\text{packet_delay} = 0.1667 \times 10^{-6} \text{sec}$$

$$\text{total_delay} = 0.025061747 \text{sec}$$

$$\text{propagation_proportion} = 0.99754$$