In **stop-and-wait ARQ** only **one frame** is transmitted in a complete Round trip time.

* **Transmission Time = Data size / Bandwidth**
* Transmission Time = 10000 Byte / 106 bps
* Transmission Time = 104 x 8 / 106 bps // 1 Byte = 8 bits
* Transmission Time = 8 bits / 102 bits per second
* Transmission Time = 8 bits / 102 bps
* Transmission Time = **80 msec**

**efficiency** = (Transmission time) **/** (Transmission time + 2 x Propagation time + Ack transmission time) x 100

* Ack transmission time = Ack size / Bandwidth
* Ack transmission time = 500 Bytes /106 bps = > 500 x 8 bits /106 bps = > 4000 bits /106 bps => **4 msec**

**transmission efficiency :**

* **efficiency**= (Transmission time)**/**(Transmission time + 2 x Propagation time + Ack transmission time) x 100
* efficiency= ( 80 msec) / ( 80 msec + 2 x 50 msec + 4 msec) x 100
* efficiency = ( 80 msec) / ( 80 msec + 100 msec + 4 msec) x 100
* efficiency = ( 80 msec) / (184 msec ) x 100
* efficiency= 0.4347 x 100
* **efficiency**= **43.47** %
* **effective transmission rate** = **available Bandwidth** x **efficiency**
* effective transmission rate = 106 bps x **43.47** %
* effective transmission rate = 434700 bps
* **effective transmission rate = 434.700 Kbps**

(means we are only able to use 434.700 Kbps Bandwidth out of total 1 Mbps Bandwidth)