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# Transmission/time-out freezing&Selective retransmission

**Introduction:** Often, MAC layer notices connection problems even before the connection is actually interrupted from a TCP point of view and also knows the real reason for the interruption. The MAC layer can inform the TCP layer of an upcoming loss of connection or that the current interruption is not caused by congestion. TCP can now stop sending and 'freezes' the current state of its congestion window and further timers. If the MAC layer notices the upcoming interruption early enough, both the mobile and correspondent host can be informed. With a fast interruption of the wireless link, additional mechanisms in the access point are needed to inform the correspondent host of the reason for interruption. Otherwise, the correspondent host goes into slow start assuming congestion and finally breaks the connection

As soon as the MAC layer detects connectivity again, it signals TCP that it can resume operation at exactly the same point where it had been forced to stop. For TCP time simply does not advance, so no timers expire.

**Advantages:**

It offers a way to resume TCP connections even after long interruptions of the connection.

It can be used together with encrypted data as it is independent of other TCP mechanisms such as sequence no or acknowledgements

**Disadvantages:**

Lots of changes have to be made in software of MH, CH and FA.

**Selective retransmission:**

A very useful extension of TCP is the use of selective retransmission. TCP acknowledgements are cumulative, i.e., they acknowledge in-order receipt of packets up to a certain packet. A single acknowledgement confirms reception of all packets up to a certain packet. If a single packet is lost, the sender has to retransmit everything starting from the lost packet (go-back-n retransmission). This obviously wastes bandwidth, not just in the case of a mobile network, but for any network.

Using selective retransmission, TCP can indirectly request a selective retransmission of packets. The receiver can acknowledge single packets, not only trains of in-sequence packets. The sender can now determine precisely which packet is needed and can retransmit it. The **advantage** of this approach is obvious: a sender retransmits only the lost packets. This lowers bandwidth

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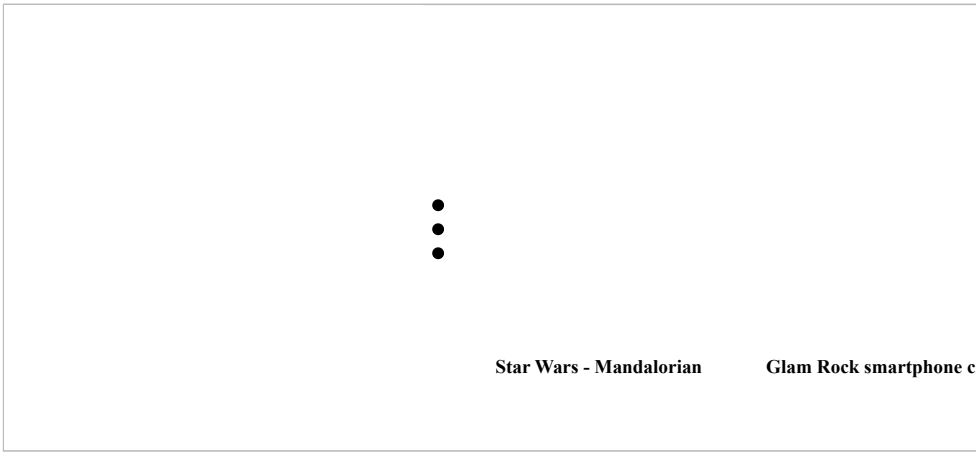
buffer space is needed to resequence data and to wait for gaps to be filled.

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## Questions of this topic

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|---|---|
| Explain Selective retransmission | Answer This |
| Describe Mobile Computing | Answer This |
| Explain Advantages and disadvantages for Transmission/time-out freezing | Answer This |
| What is the use of MAC layer in mobile connection? | Answer This |

**Ask your question**

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Question

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