

# UNIT-4

## The Transport Layer

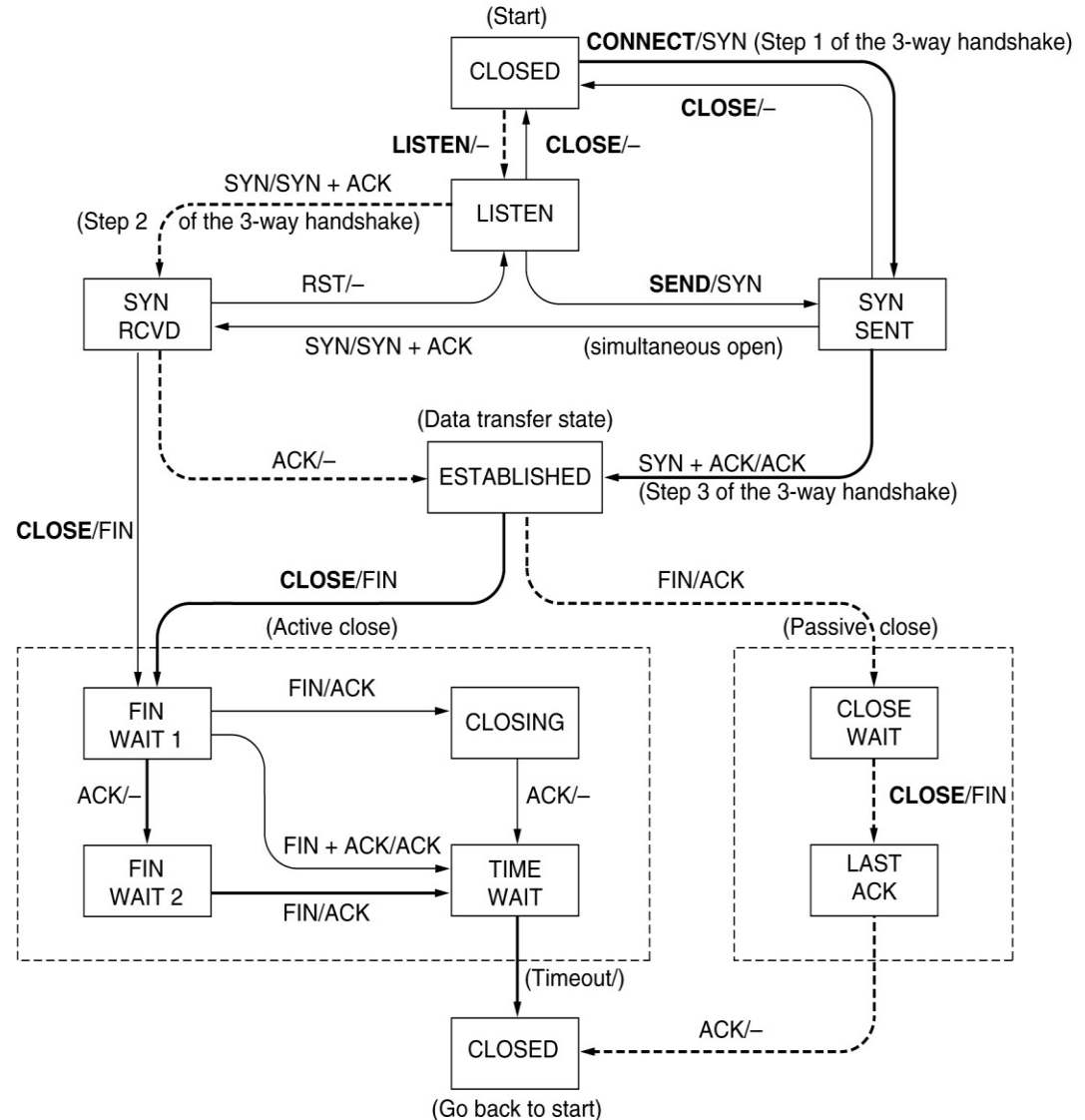
# TCP Connection Management Modeling

<b>State</b>	<b>Description</b>
CLOSED	No connection is active or pending
LISTEN	The server is waiting for an incoming call
SYN RCVD	A connection request has arrived; wait for ACK
SYN SENT	The application has started to open a connection
ESTABLISHED	The normal data transfer state
FIN WAIT 1	The application has said it is finished
FIN WAIT 2	The other side has agreed to release
TIMED WAIT	Wait for all packets to die off
CLOSING	Both sides have tried to close simultaneously
CLOSE WAIT	The other side has initiated a release
LAST ACK	Wait for all packets to die off

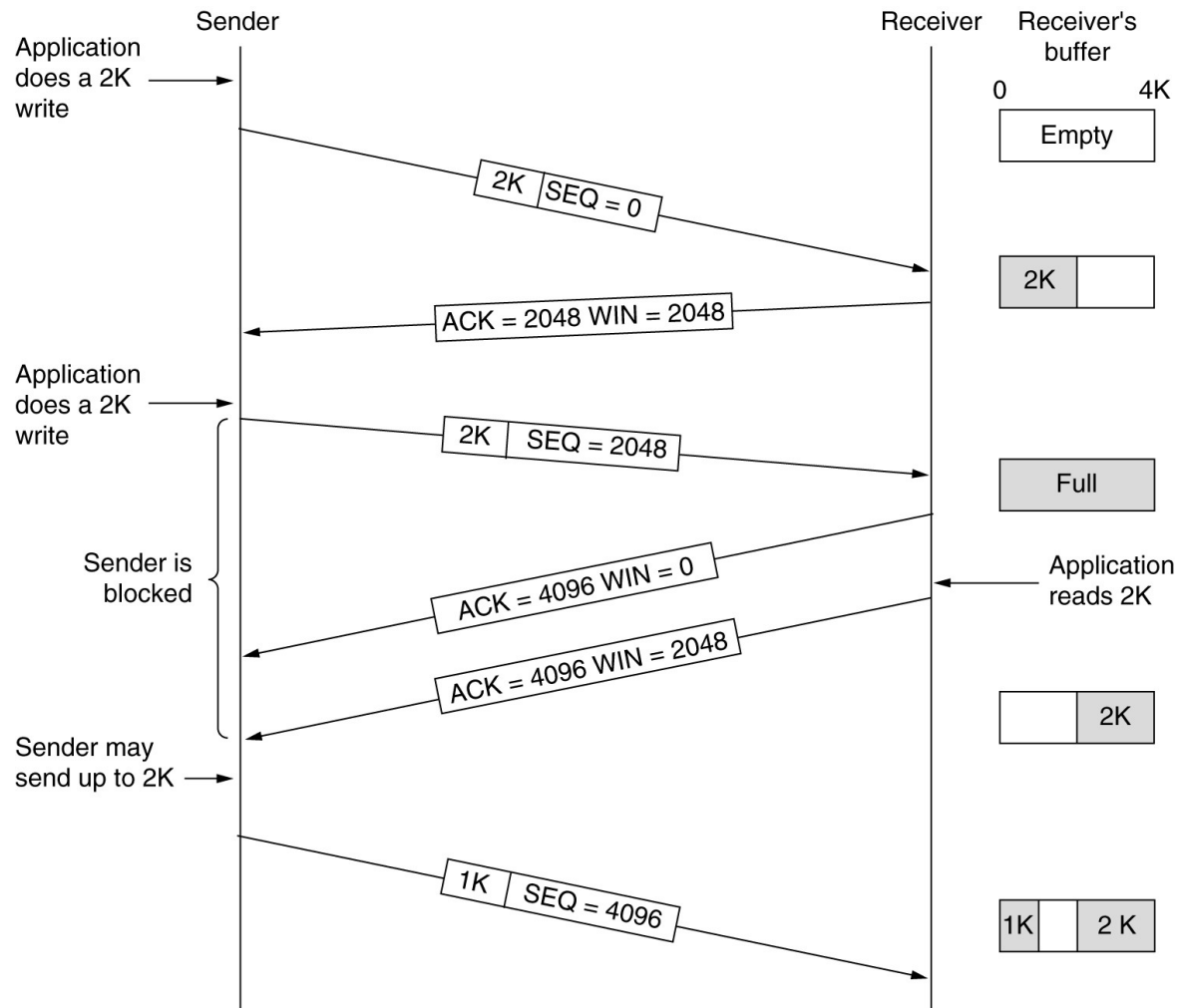
The states used in the TCP connection management finite state machine.

# TCP Connection Management Modeling (2)

TCP connection management finite state machine. The heavy solid line is the normal path for a client. The heavy dashed line is the normal path for a server. The light lines are unusual events. Each transition is labeled by the event causing it and the action resulting from it, separated by a slash.

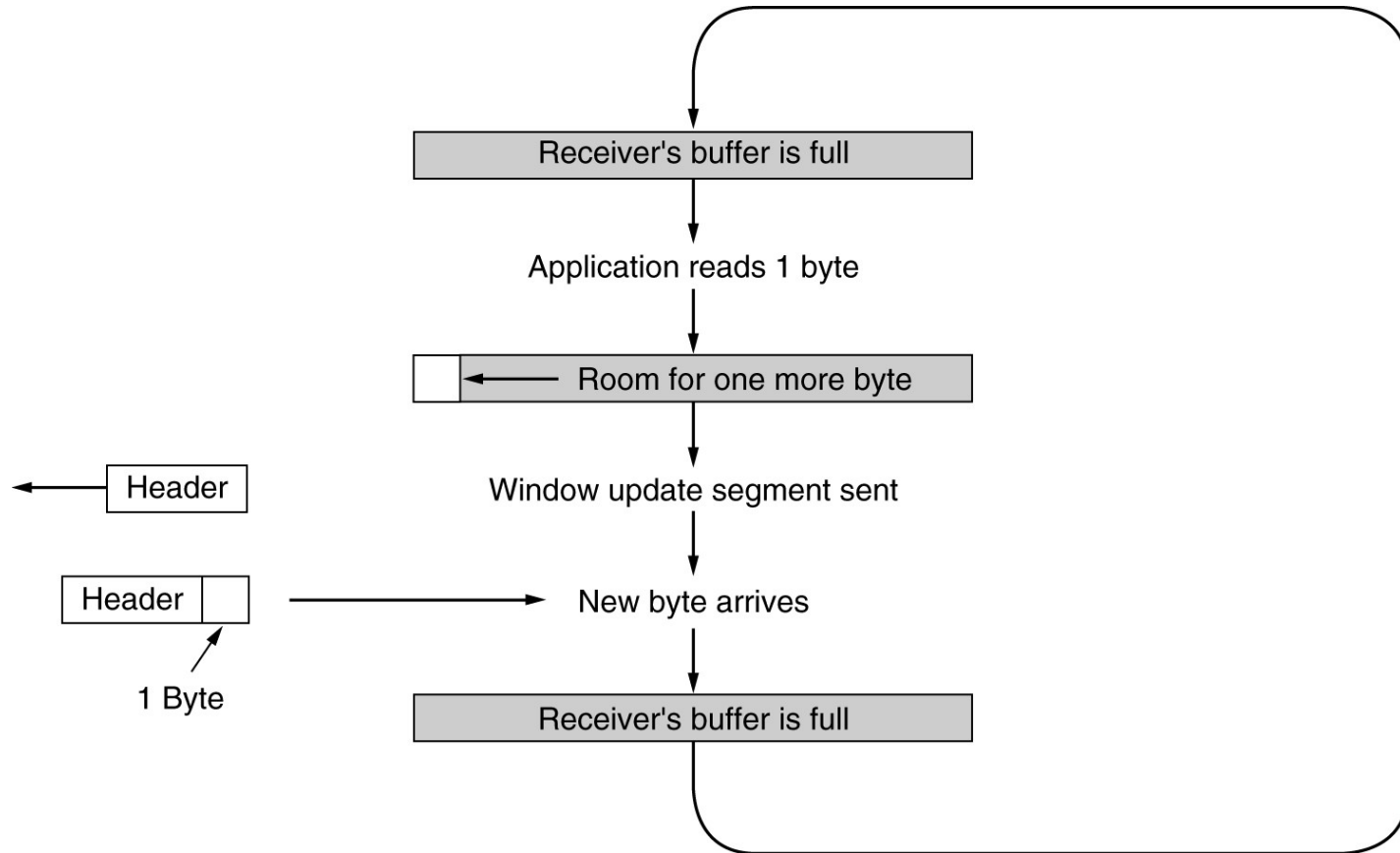


# TCP Transmission Policy



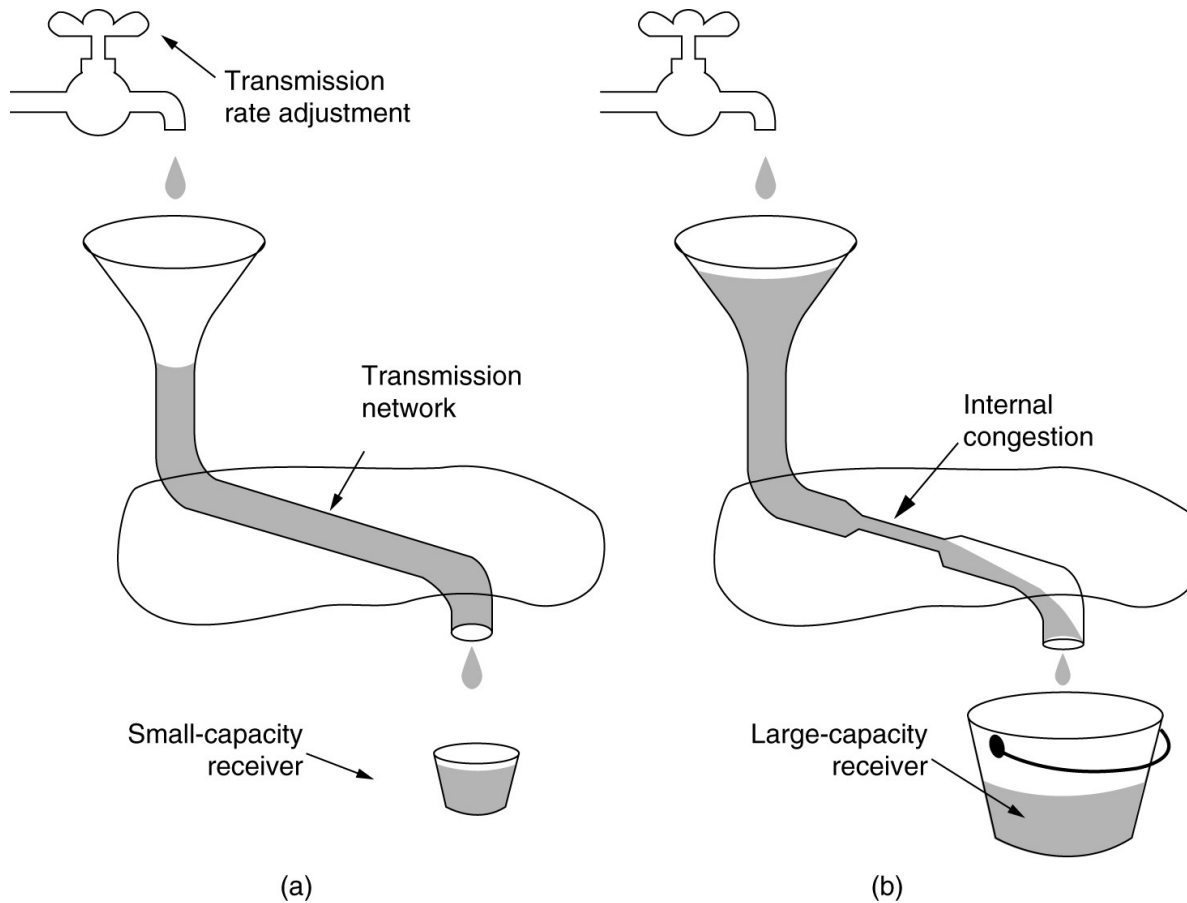
Window management in TCP.

# TCP Transmission Policy (2)



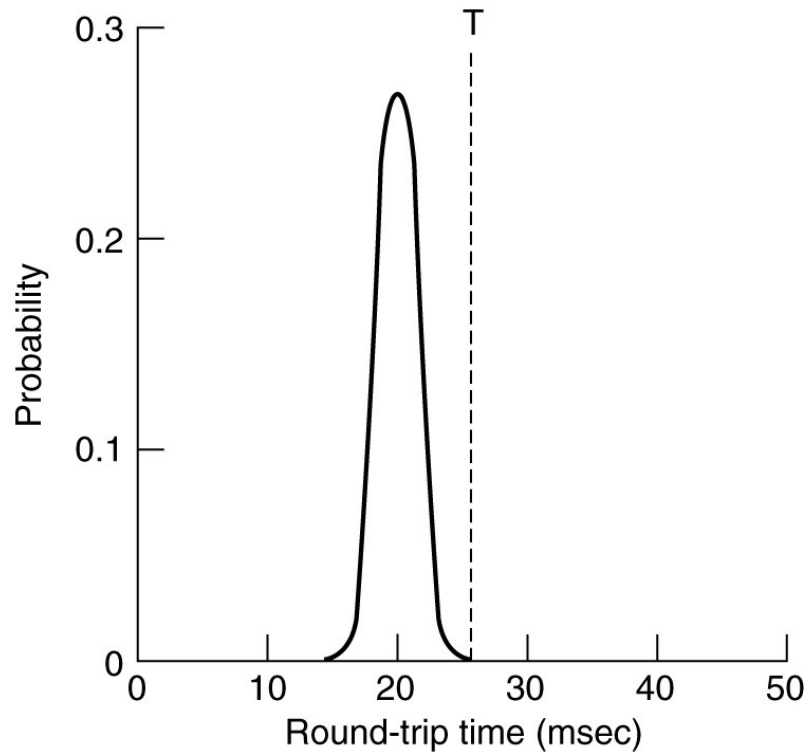
Silly window syndrome.

# TCP Congestion Control

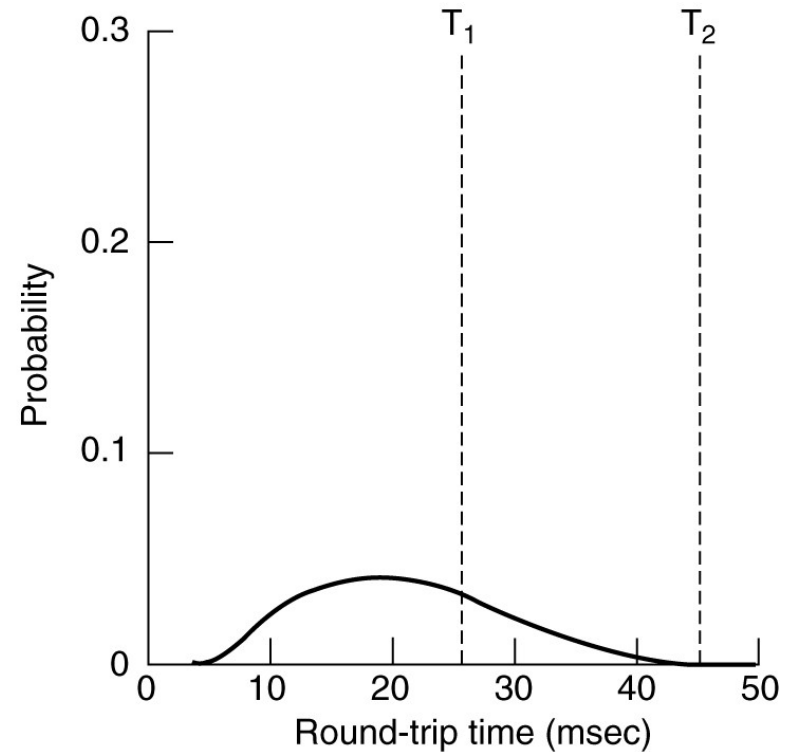


- (a) A fast network feeding a low capacity receiver.
- (b) A slow network feeding a high capacity receiver.

# TCP Timer Management



(a)



(b)

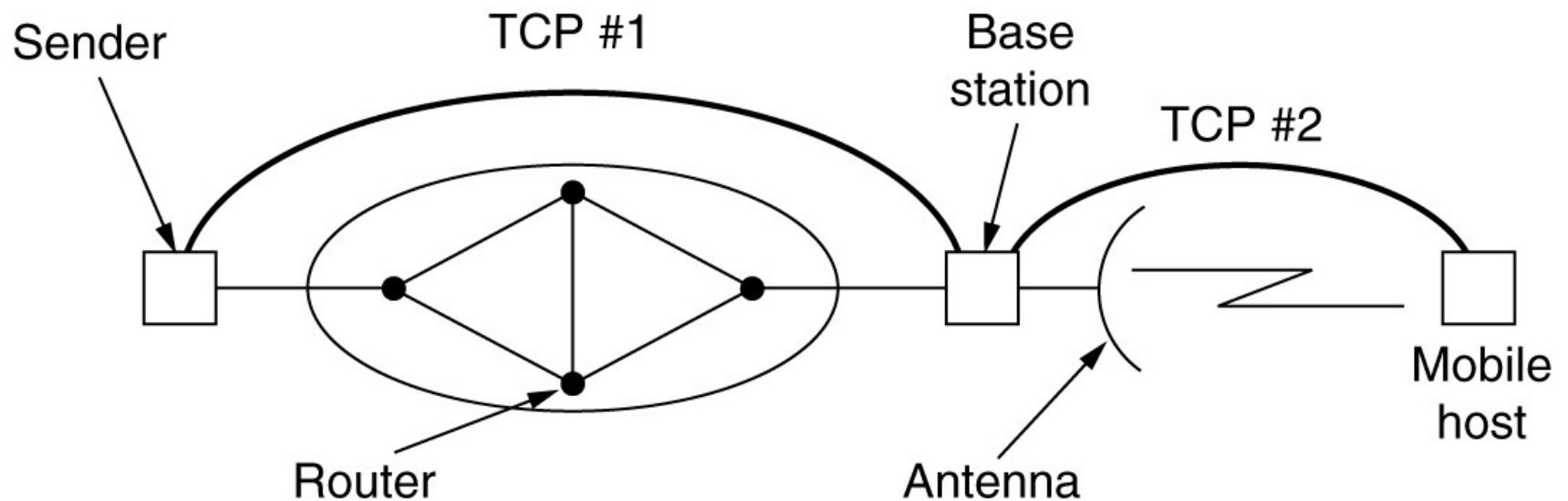
- (a) Probability density of ACK arrival times in the data link layer.
- (b) Probability density of ACK arrival times for TCP.

Solution for TCP timer:

Highly dynamic algos that constantly adjust the time interval ,based on continuous measurement of n/w performance.

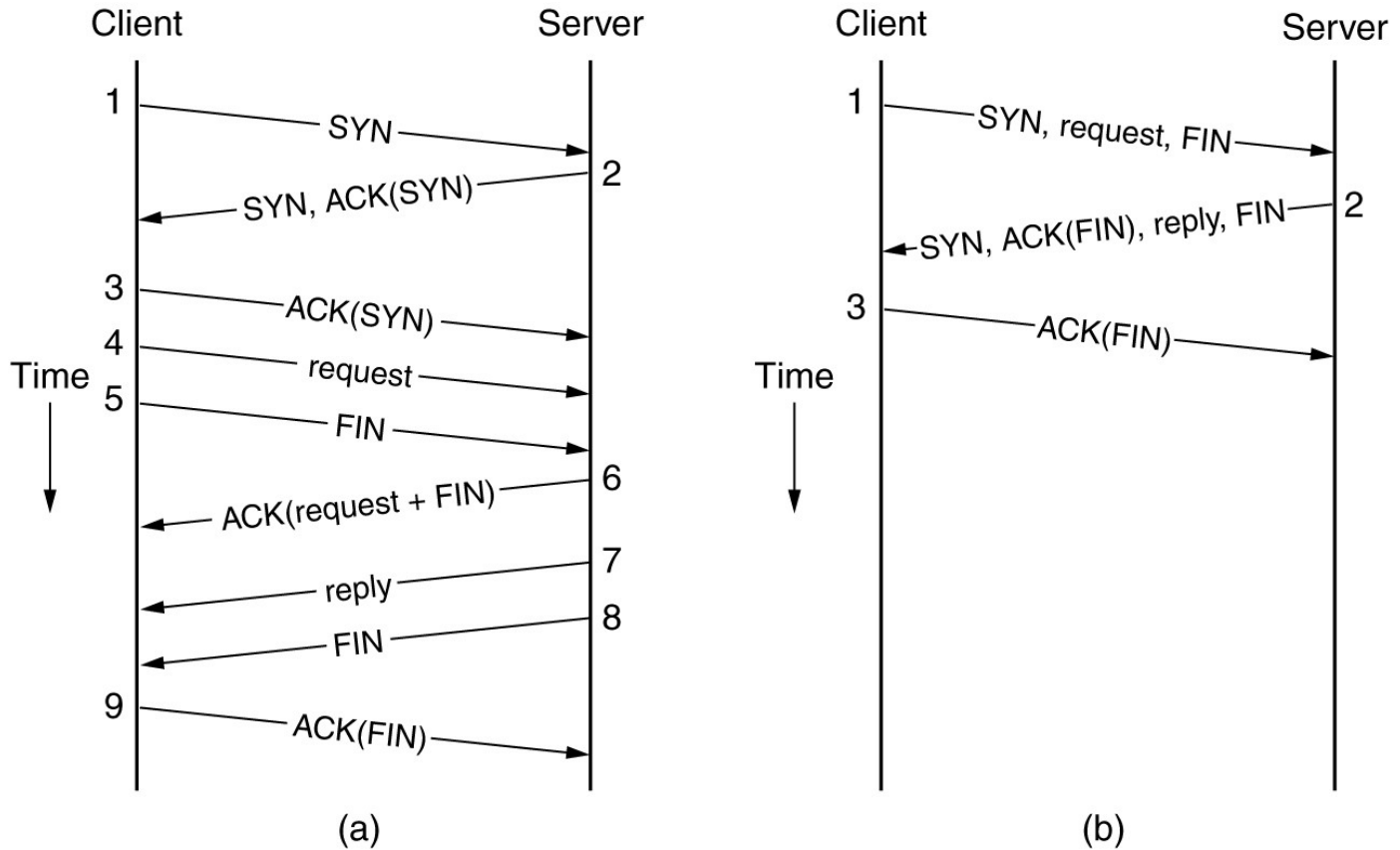


# Wireless TCP and UDP



Splitting a TCP connection into two connections.

# Transactional TCP



(a) RPC using normal TCP.

(b) RPC using T/TCP.

**Thank you**