

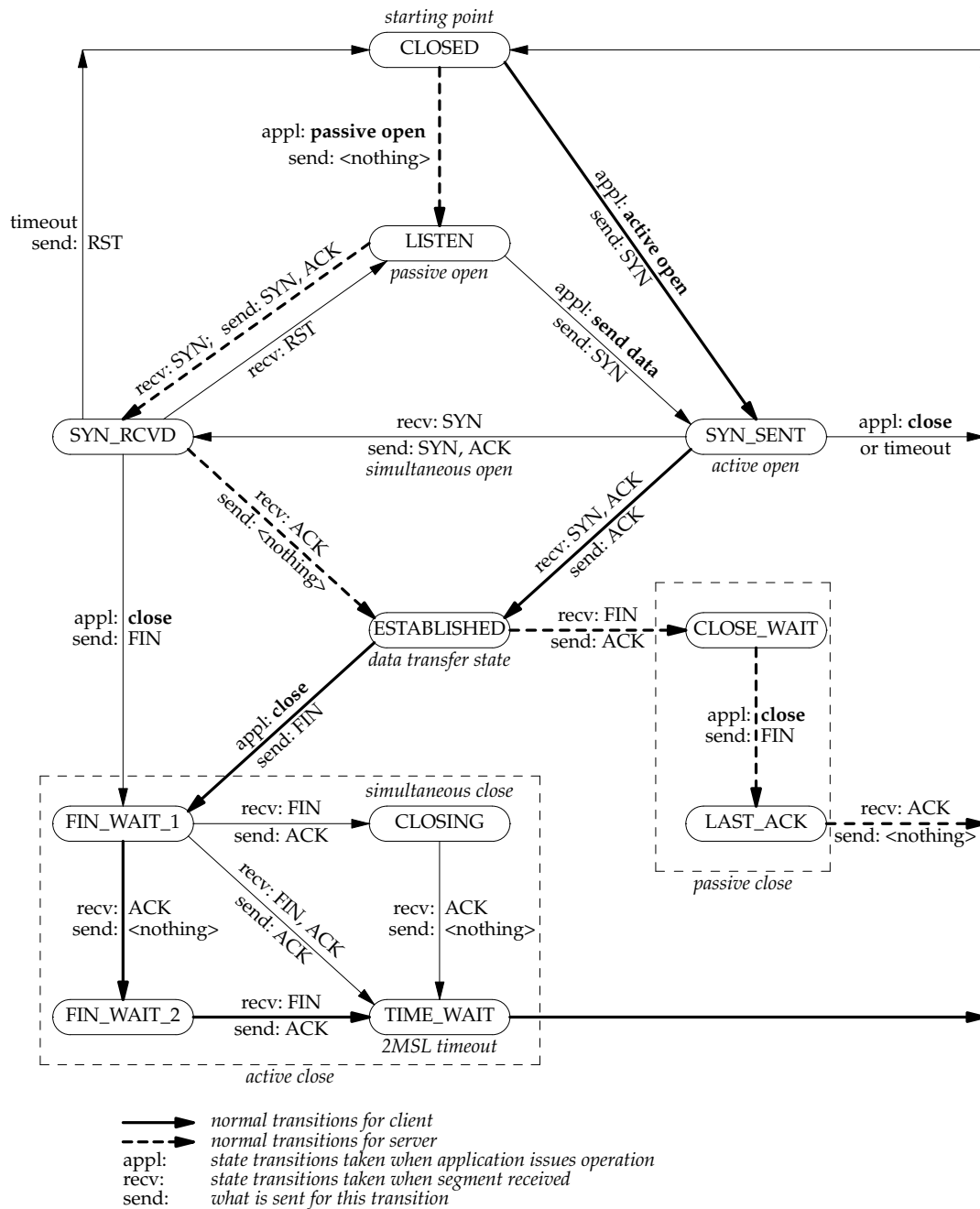
TCP/IP State Transition Diagram (RFC793)

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A connection progresses through a series of states during its lifetime. The states are: LISTEN, SYN-SENT, SYN-RECEIVED, ESTABLISHED, FIN-WAIT-1, FIN-WAIT-2, CLOSE-WAIT, CLOSING, LAST-ACK, TIME-WAIT, and the fictional state CLOSED. CLOSED is fictional because it represents the state when there is no TCB, and therefore, no connection. Briefly the meanings of the states are:

- LISTEN** represents waiting for a connection request from any remote TCP and port.
- SYN-SENT** represents waiting for a matching connection request after having sent a connection request.
- SYN-RECEIVED** represents waiting for a confirming connection request acknowledgment after having both received and sent a connection request.
- ESTABLISHED** represents an open connection, data received can be delivered to the user. The normal state for the data transfer phase of the connection.
- FIN-WAIT-1** represents waiting for a connection termination request from the remote TCP, or an acknowledgment of the connection termination request previously sent.
- FIN-WAIT-2** represents waiting for a connection termination request from the remote TCP.
- CLOSE-WAIT** represents waiting for a connection termination request from the local user.
- CLOSING** represents waiting for a connection termination request acknowledgment from the remote TCP.
- LAST-ACK** represents waiting for an acknowledgment of the connection termination request previously sent to the remote TCP (which includes an acknowledgment of its connection termination request).
- TIME-WAIT** represents waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its connection termination request.
- CLOSED** represents no connection state at all.

A TCP connection progresses from one state to another in response to events. The events are the user calls, OPEN, SEND, RECEIVE, CLOSE, ABORT, and STATUS; the incoming segments, particularly those containing the SYN, ACK, RST and FIN flags; and timeouts.



TCP state transition diagram.