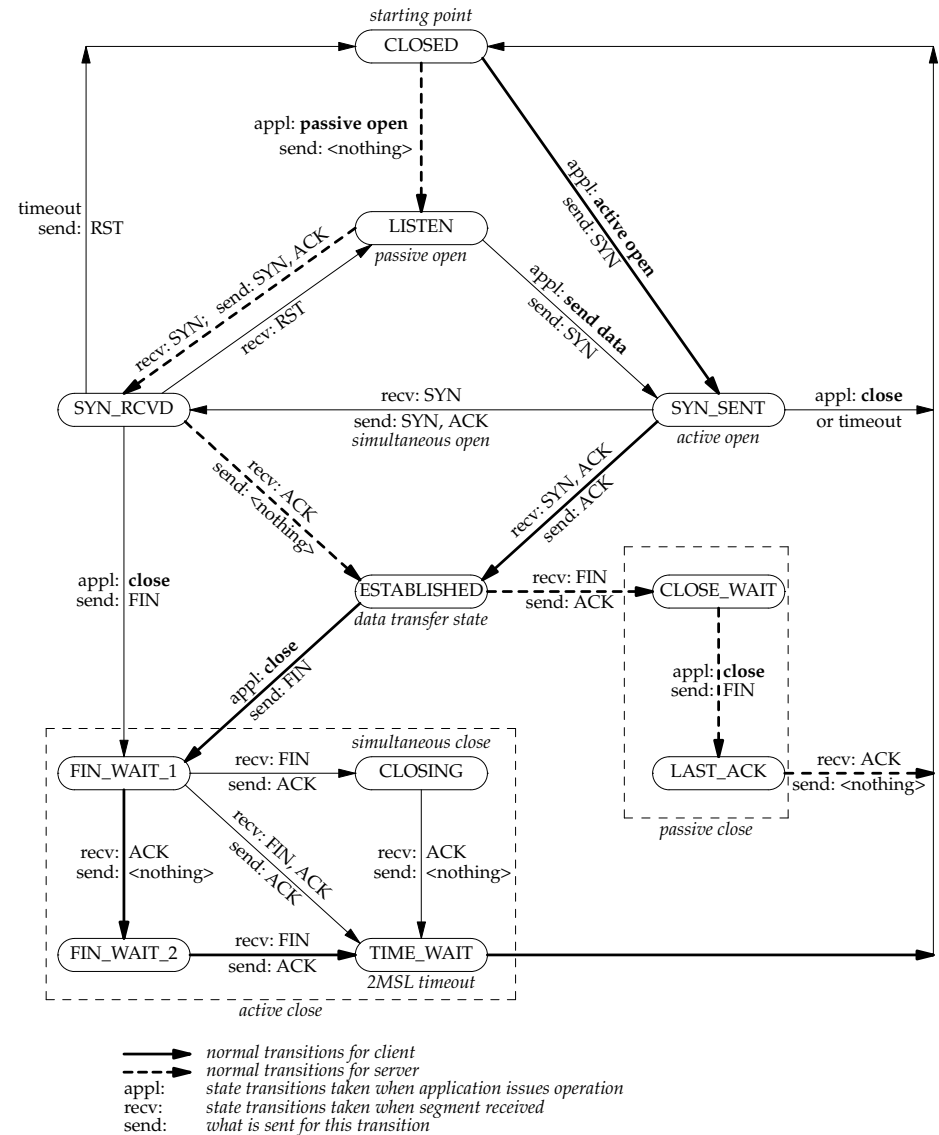# TCP/IP State Transition Diagram (RFC793)

Gordon McKinney (10 Feb 2004)

A connection progresses through a series of states during its lifetime (listed below). 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.