

Protocol with Timer

Abstract

This example shows how the CP-net from “Simple Protocol” can be modified so that the retransmission of messages is controlled by a simple timer – modelled by means of two places and two transitions. The CP-net is not using time stamps and hence it should not be confused with the “Timed Protocol”.

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Graphical Quality

The figures in this document are inserted via PICT format. This is why some of the arcs and place borders look a bit ragged. A postscript printout from Design/CPN (and the screen image in Design/CPN) has much higher graphical quality.



enables transition *Clock Tick*. Each occurrence of this transition increases the count (i.e., the value of the token at *Count*). When the count reaches a pre-set limit (determined by the token at *Limit*) transition *Clock Tick* ceases to be enabled. Instead transition *Alarm* becomes enabled. When it occurs it stops the timer and resets the value of the token at *Next Send* to 1, i.e., starts a retransmission of the entire set of packets. The two transitions in the timer may occur concurrently to the transitions in the protocol part (i.e., the other five transitions). A retransmission will occur if and only if *Alarm* occurs before *Receive Acknowledgment*. This will happen if the protocol part is “too slow” or if one or more packets get lost or overtake each other. By adjusting the timer limit it can be made more or less likely that the timer raises an alarm before the protocol part has finished.

Simple Timer

