

Some 5066 Interoperability Issues

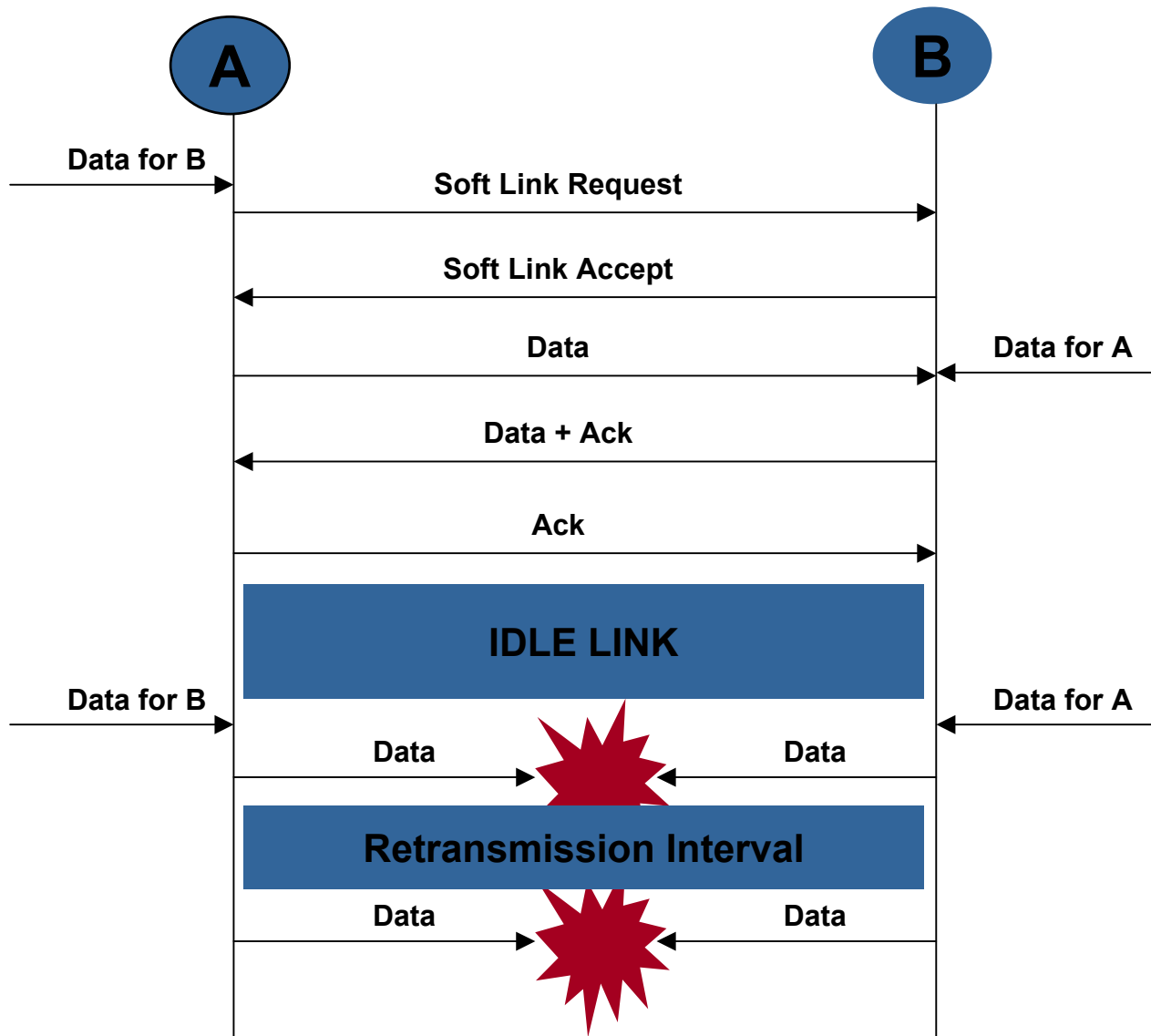


Interoperability Cooperative Meeting
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Dale Potter

Improvements for Point-to-Point Soft Links

- Collision avoidance and handling with “idle” soft links
- Collision avoidance with “third” nodes

- Once a soft link has been established, Node A and B remain in “synchronization” at DTS based on EOT as long as data and acknowledgements are exchanged
- Setting soft link time-out greater than zero allows soft link to remain and reduces over-head when Node A or B have more data to send
- But...
 - When soft link is “idle”, nodes are no longer in “synchronization” and collisions can occur when data transmission resumes
 - If both nodes are sending full transmission intervals (127.5 s), detection and then recovery from collisions can take a lot of time
- Collisions can be minimized (listen before transmit, etc.), but not eliminated (due to modem interleaving)
- Therefore, effect of collisions must be minimized



- When a soft link becomes idle it transitions to the Idle-Connected state (as identified in the DTS State Transition in Annex C)
- When a soft link changes from Idle-Connected to Data-Connected, instead of sending all queued D_PDUs (up to max transmission interval), send only a single D_PDU
- If response received, nodes are back in synch and all queued D_PDUs can be sent
- If no response received, collision is assumed and single D_PDU is retransmitted
- However, to prevent both nodes attempting to retransmit simultaneously causing repeated collisions, the master node transmits immediately while slave node waits an additional delay

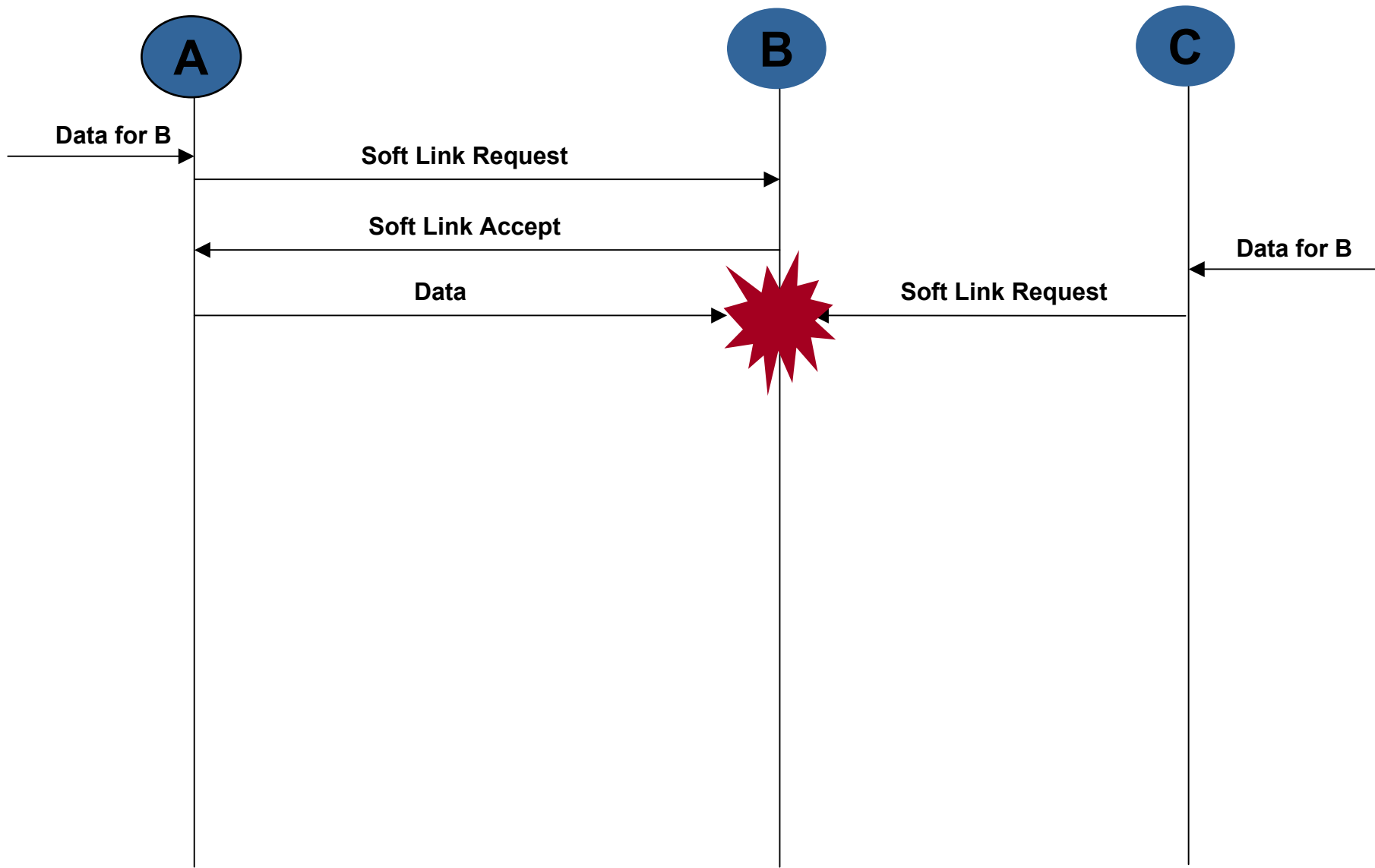


- No inherent interoperability issues since solution is fully compliant with STANAG 5066
- Other solutions were considered...
 - Using Resynch (Type 3) or Management (Type 6) D_PDUs
 - Using empty Data (Type 0) D_PDU
- ... but were discarded due to potential interoperability problems
- Even if Node A implements improvement but Node B does not, result will still be effective since both nodes will not be consistently retransmitting full transmission interval of data at the same time



- When Nodes A and B are exchanging data, a third node, C can cause collisions because it is waiting for the same EOT to expire
- Nothing in STANAG to prevent this from happening

Third Node Collisions - Scenario



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- Node receives data and monitors EOT to determine when transmission is possible (currently required by STANAG)
 - If node is destination of D_PDUs being monitored, transmit immediately after EOT expires
 - If node is not destination of D_PDUs being monitored, introduce additional delay before transmitting
- This will allow nodes with active soft link to continue to exchange data
- Once nodes have completed exchanging data (idle soft link), third node can transmit

- No inherent interoperability issues since solution does not violate any STANAG 5066 requirements

Questions 

