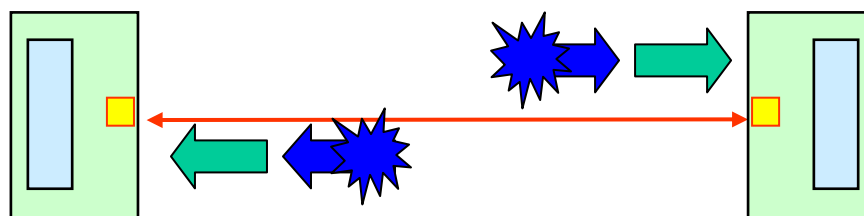




RMAP Multi-master Network Configuration

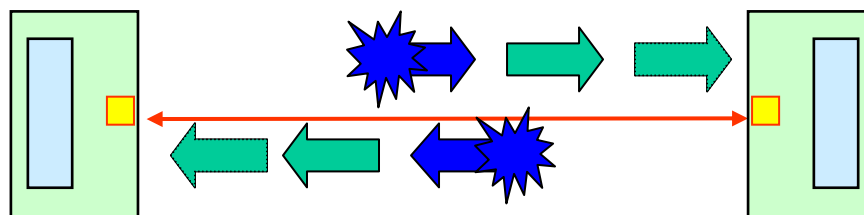
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Case1: Two RMAP masters interconnected



- (1) Each master send a RMAP command packet.
- (2) Each master generates a reply.
- (3) If the device blocks incoming data until it has processed the RMAP command, the reply can not be sent.
- (4) The link get stuck and it has to be reset.

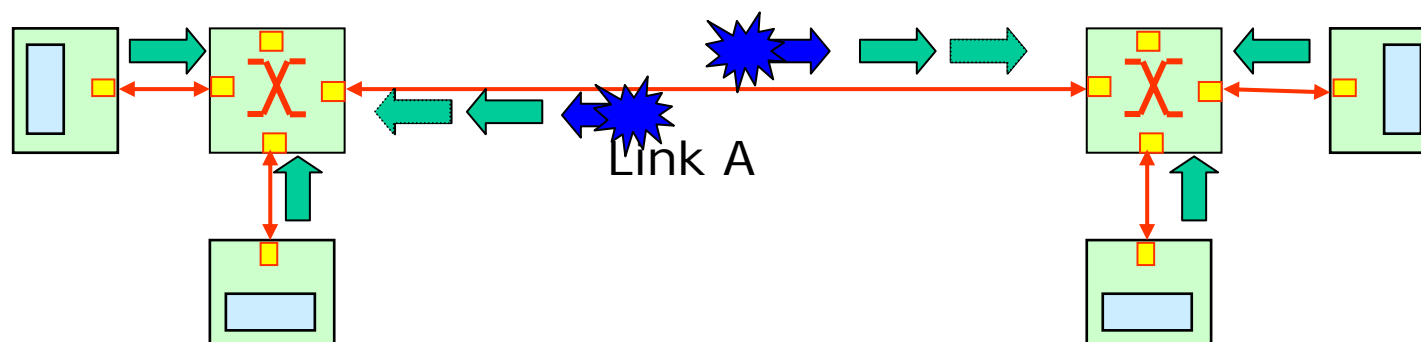
Case1: Two RMAP masters interconnected (2)



Situation with RMAP command pipeline of length 1 as implemented in ESA devices (SpW Router, SpW RTC)

- (1) Each master sends **two consecutive** RMAP command packets
- (2) Each master generates a reply.
- (3) The reply message can not be sent because the second RMAP commands has not been processed yet.
- (4) The link get stuck and it has to be reset.

Case2: 2 Routers interconnected



- (1) All nodes tries to read both router parameters at the same time (i.e. after reset). First, they access the router where they are connected. Then they try to access the router that is connected to the first one accessed.
- (2) It is possible that each router receives at the same time two consecutive read commands at each side of the link A
- (3) A RMAP read command is processed and a reply is generated in each router.
- (4) However, read replies can not be sent because are blocked by the other read commands that are waiting to be processed.



Case2: 2 Routers interconnected (2)

- This situation requires at least 4 nodes. (Two nodes connected two each router)
- This situation can be avoided if a timeout is enabled in the routers. However, routers should not timeout at the same time or the retrial mechanism in the nodes should not be the same.
- Better: RMAP commands to routers should be restricted.

Other RMAP considerations

- Some implementations reply to a RMAP command with an invalid address with a RMAP reply with the error code: “*General error code*”. The error code “RMAP Command not implemented or not authorised” is the one recommended in this case.
- Increment address option interpretation depends of the destination node. In a 4 byte RMAP operation the source needs to know the increment address option required by the destination.



Other SpW considerations

- It is important to remember that SpW is only full duplex. If one side of the link can not receive data and it is stalled, user application should not reset the link, as it will not restart.
- Therefore Timeout option in the routers should be always enabled.