

Network bound ranging mechanism

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Network bound ranging objectives

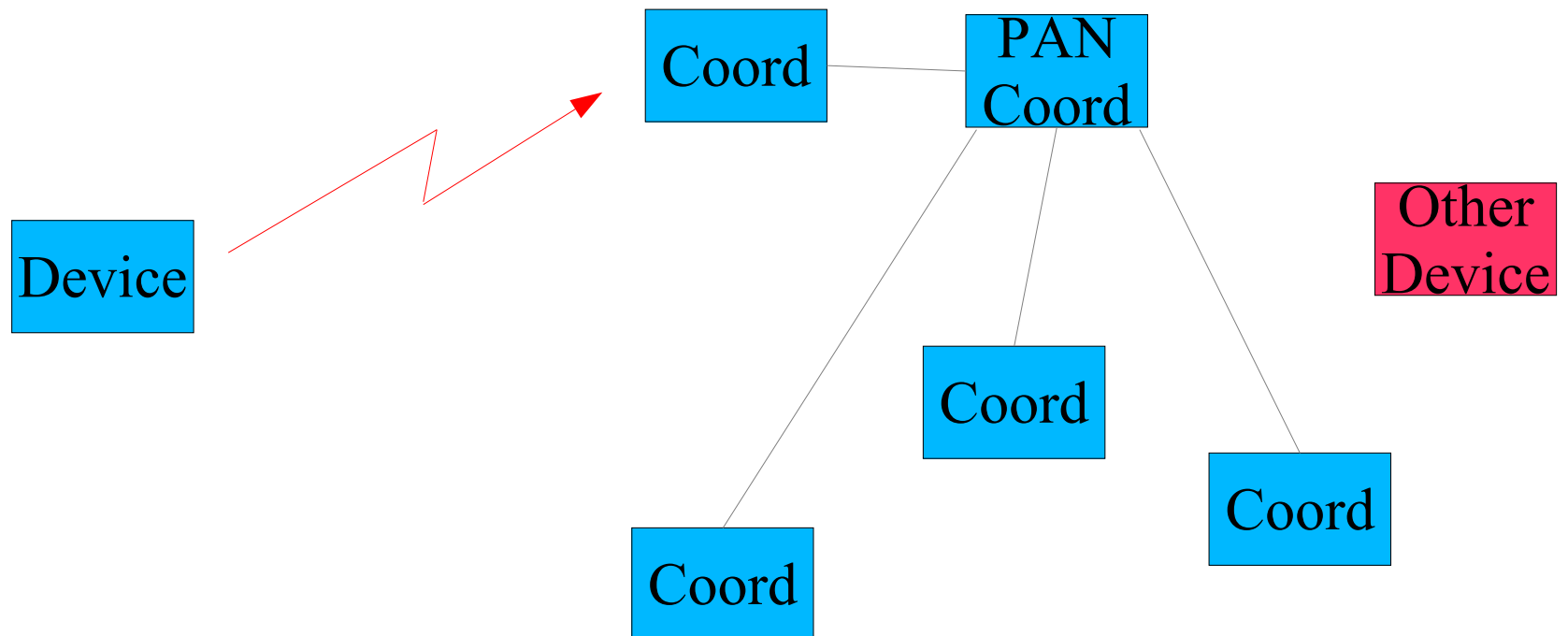
- Have ranging algorithm abilities mostly located in coordinators
- Have minimal ranging algorithm abilities located in RFD's
- Have minimal impact on devices not supporting ranging
- Make life difficult for devices not intended to receive ranging process results

Optional security

- Allow for standard payload encryption mechanisms already provided by 802.15.4
- Allow for operation without encryption where ranging security is not required

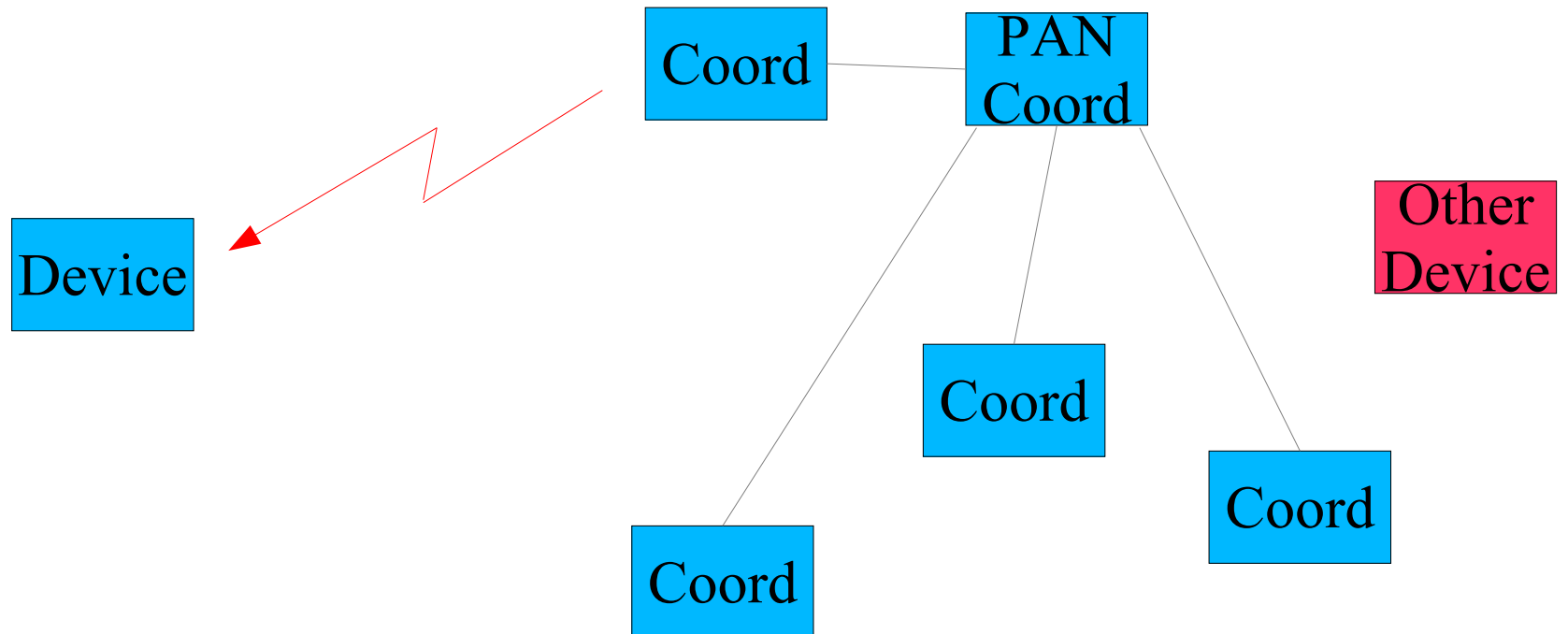
Example exchange sequence

- Device (RFD or FFD) wakes up and asks its coordinator if data is pending (no change to current process)



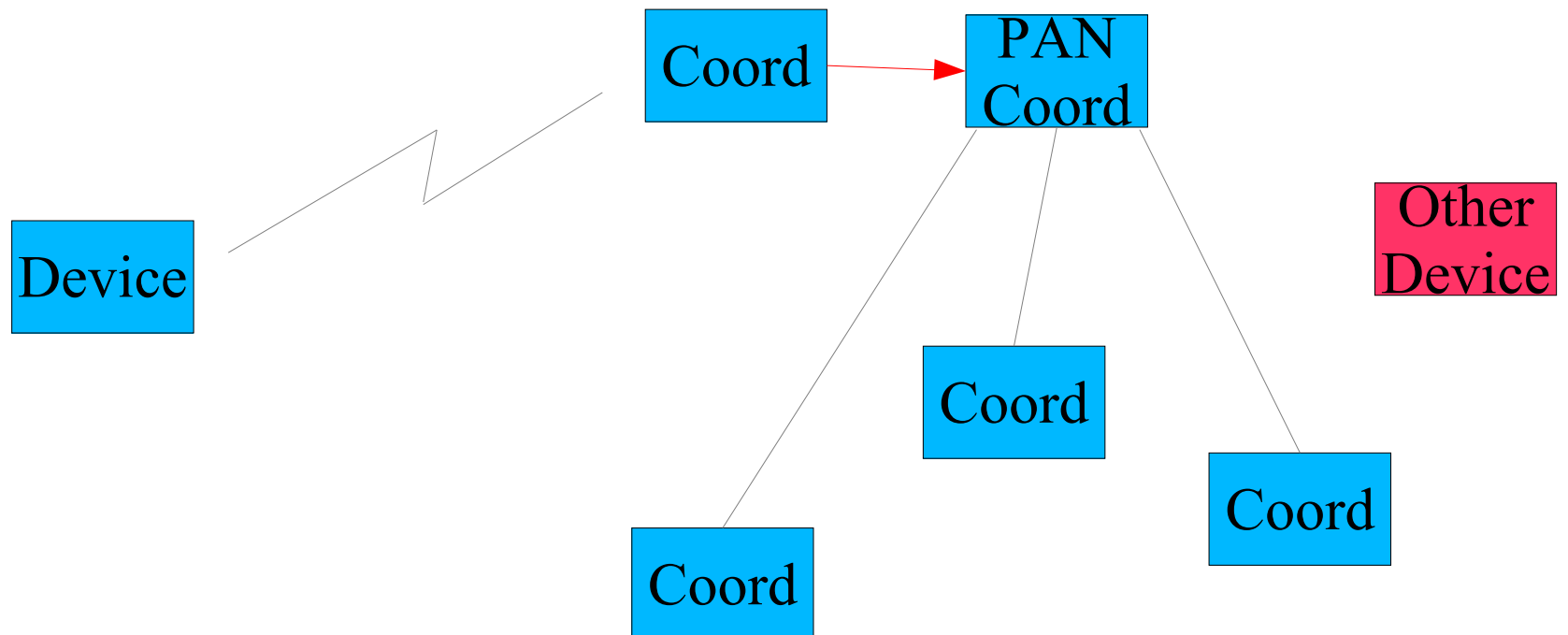
Example exchange sequence

- Coordinator replies with **standby** for ranging



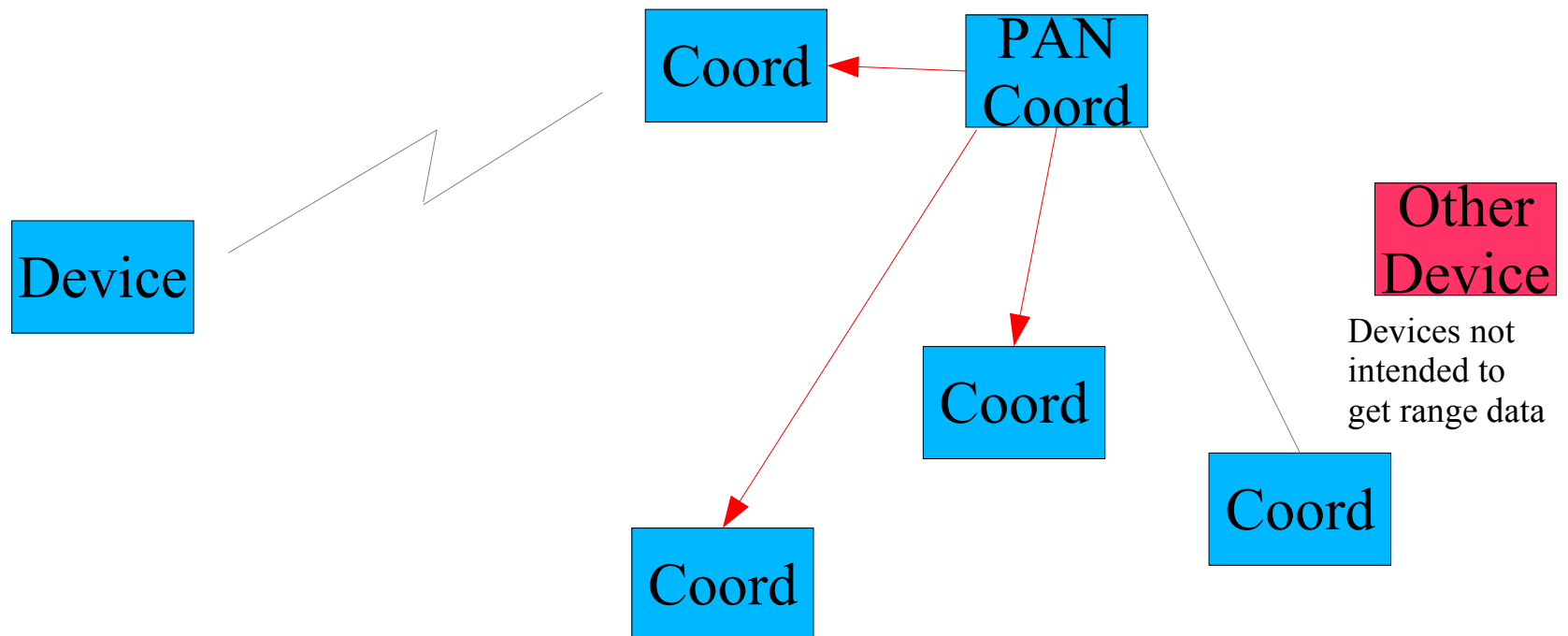
Example exchange sequence

- Coordinator tells PAN coordinator ranging in standby for device (RFD or FFD) with some parms (channel, time slot, etc...)



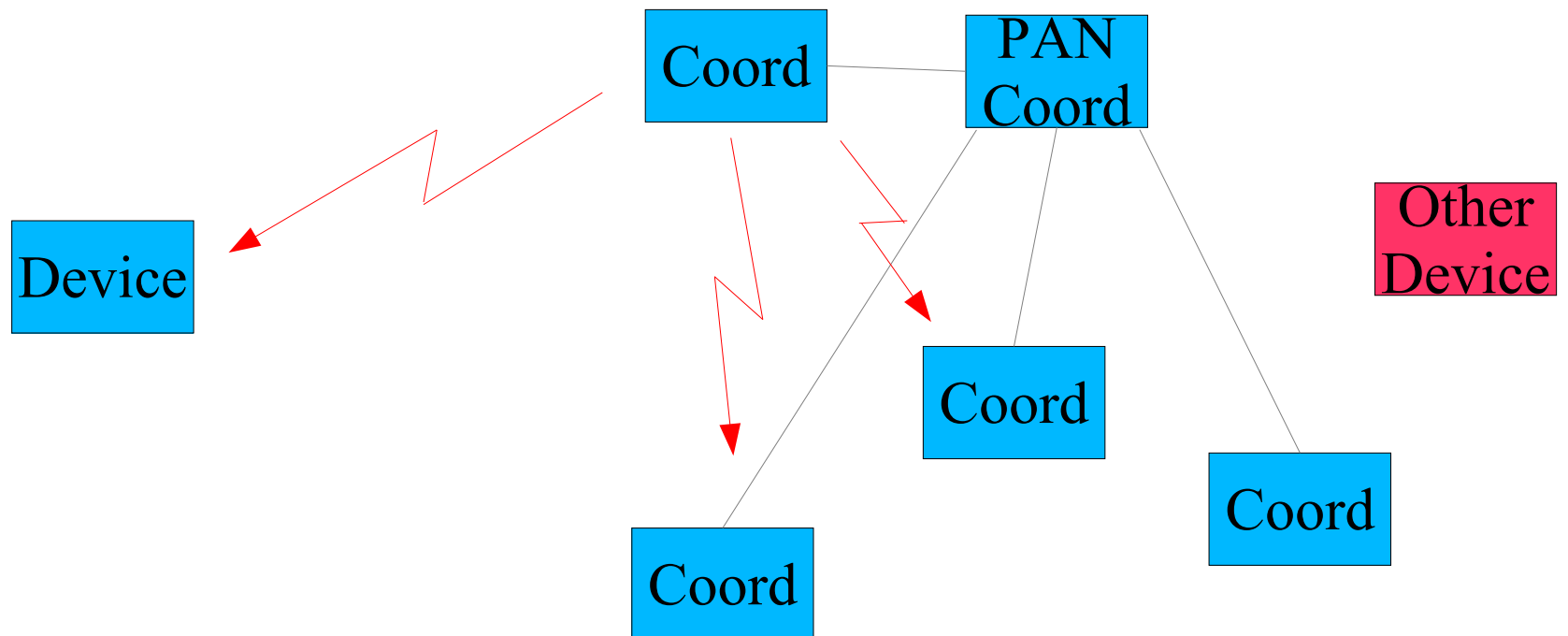
Example exchange sequence

- PAN coordinator requests affected coordinators to range this device now



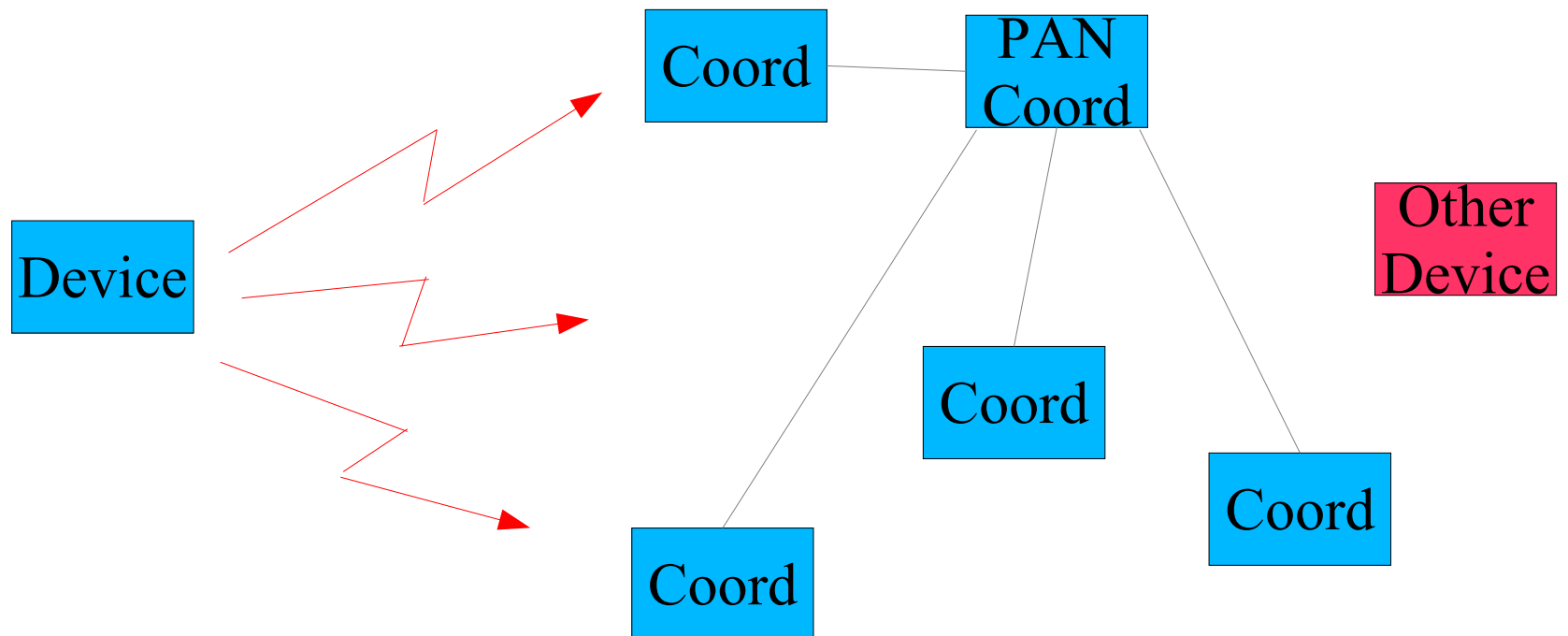
Example exchange sequence

- Coordinator requests ranging response from device with time reference value



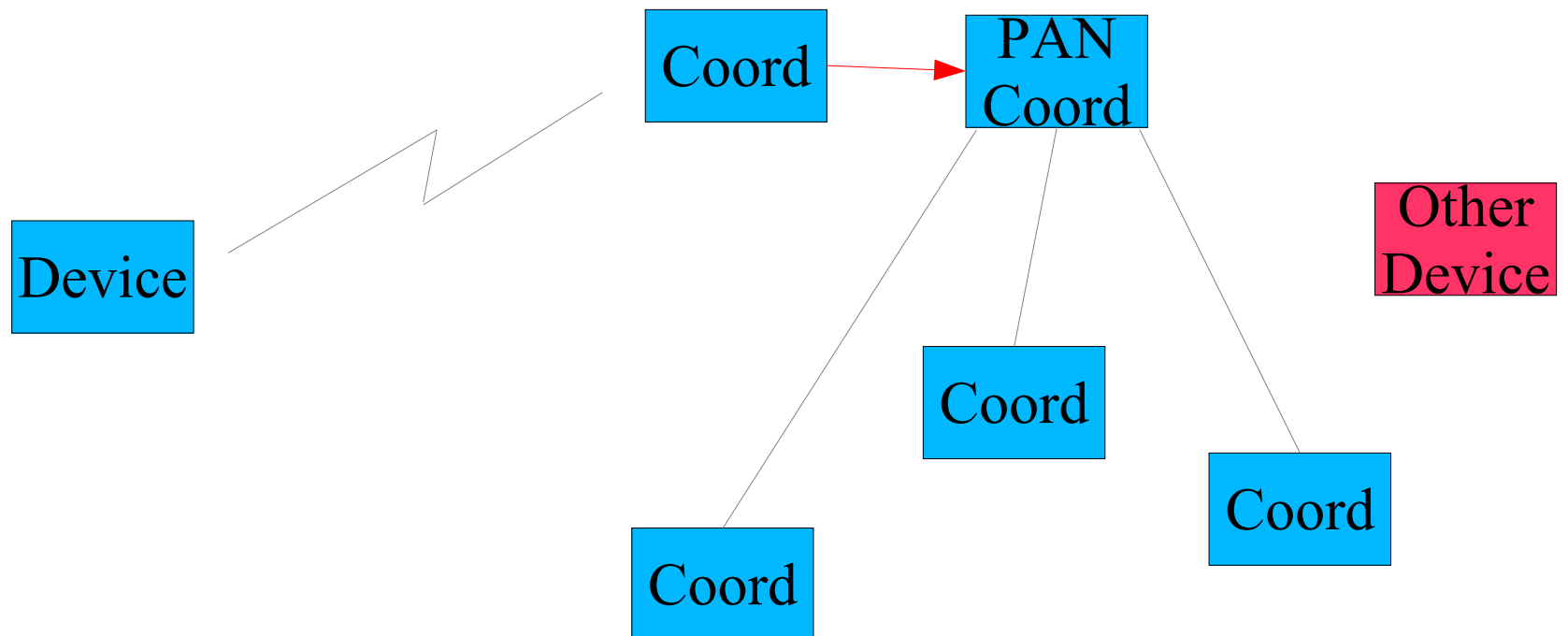
Example exchange sequence

- Device broadcasts ranging response according to time reference value



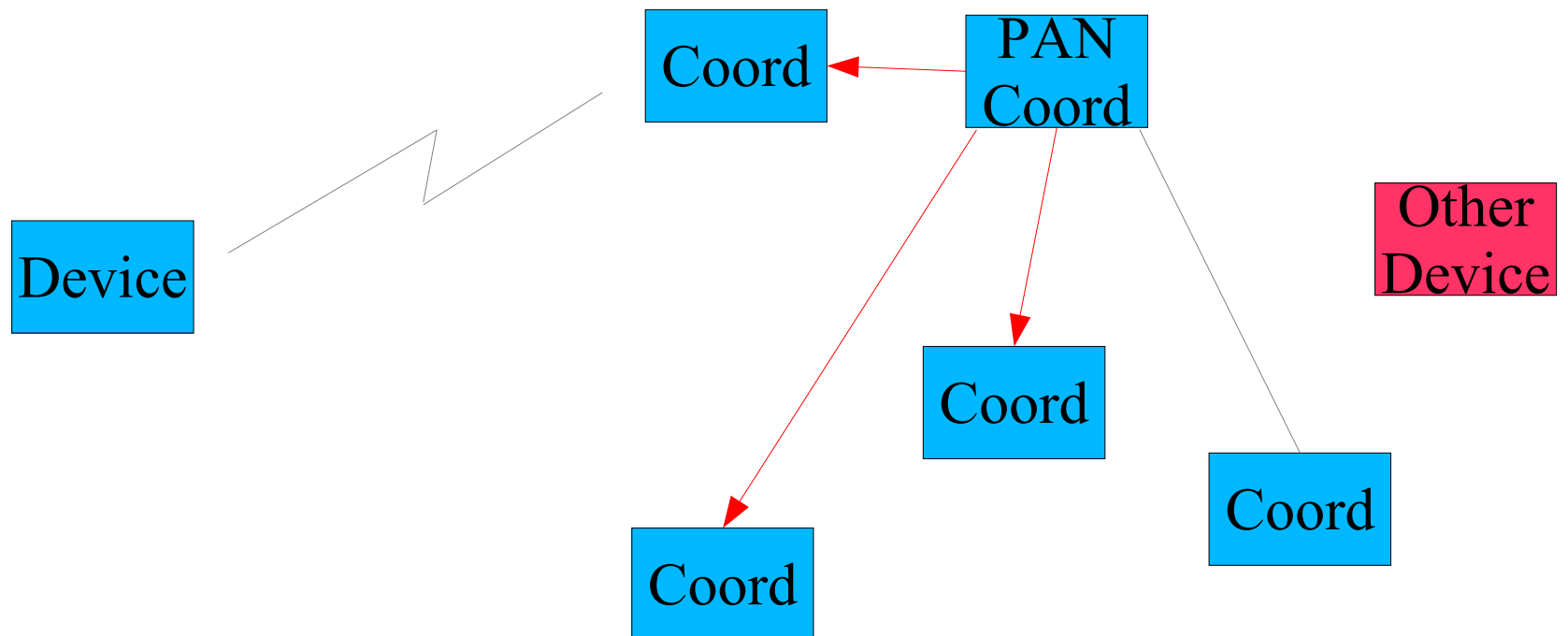
Example exchange sequence

- Coordinator transmits encrypted time offset stamp to PAN coordinator



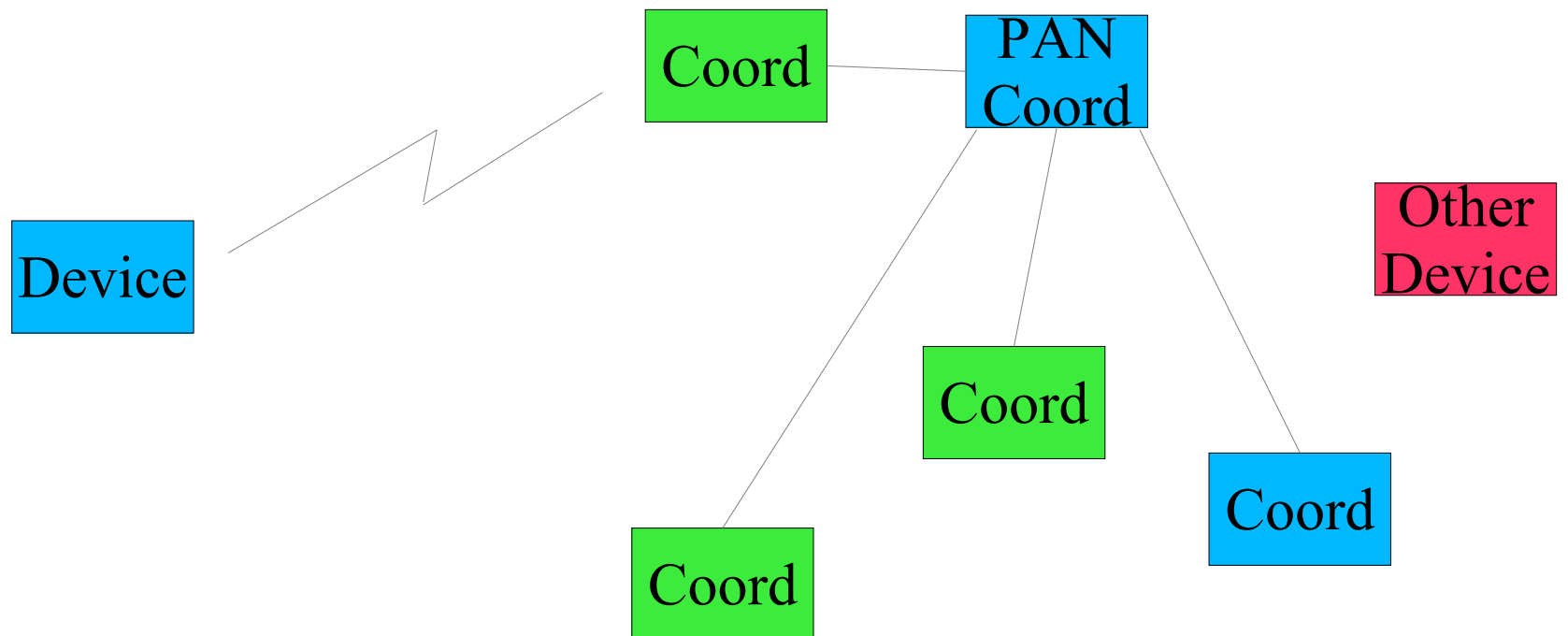
Example exchange sequence

- PAN coordinator transmits encrypted time offset stamp to coordinators authorized to ranging this RFD



Example exchange sequence

- Authorized coordinators complete ranging task



Example exchange sequence

- Coordinators reponds to original data queryry

