



RoE startup

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Background

- ❑ Referring to agreement in `tf3_1506_korhonen_3a.pdf` this document proposes:
 - Dynamic discovery/insertion of a “slave” (i.e. RE).
 - Parameter “negotiation” between a RE and a REC.

- ❑ These dynamic mechanisms are complementary to static configuration.

RoE startup phase

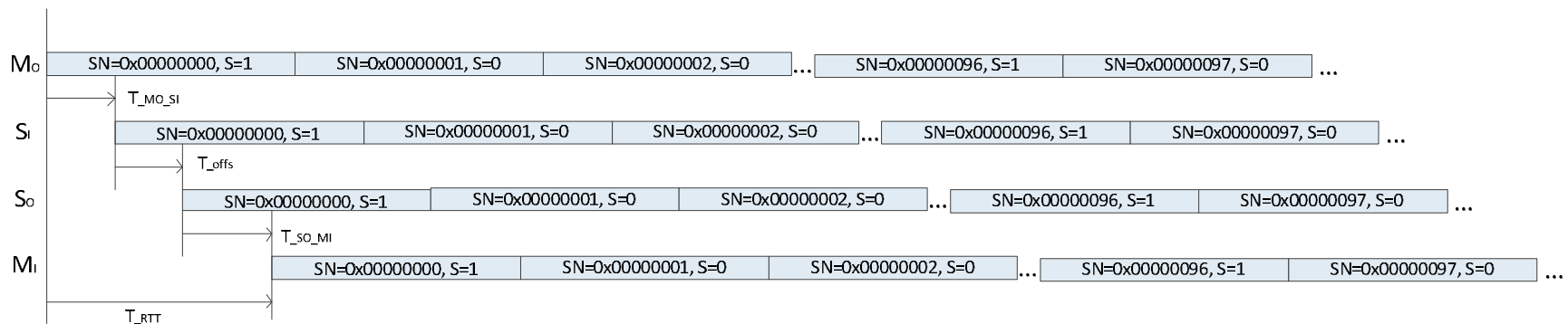
- ❑ Boot-up + discovery: (optional)
 - After the possible authentication/authorization
 - After the possible setup of SA between RE and REC.
- ❑ Endpoint parameter negotiation: (optional)
 - Three-way handshake initiated by the RE.
 - Agree the common set of parameters to use between the RE and the REC.
 - “agree” is driven/dictated by the REC.
- ❑ Start of communication: (mandatory)
 - Once REC starts DL data flow, it in turn indicates the RE to start UL data flow.

Start of communication

- When the RoE "link" comes up the RoE slave (RE) does not start transmitting data but rather waits for the RoE master (REC) to first send RoE data packets to it.
- The initial phase of the link setup involves:
 - Reseting RoE SN to 0 on both ends.
 - Master starts to send data to downlink direction.
 - Slave waits until it gets the first RoE data packet with $S=1$.
 - Slave echoes SN and S back to master in uplink direction (the echoed packet involves the slave internal delay).
 - Both ends wait until they have received at least four $S=1$ packets and after that both ends move into "active state" and start transmitting proper radio data.
 - Slave keeps echoing SNs to the master in its packets.

Start of communication, cont'd

- The start-up procedure illustrated:



Motion

- Accept the start-up procedure described in tf3_1508_korhonen_start_up_nego_4.ppt pages 4-5 as a baseline.
- John Doe making the motion
- Seconded by Jane Doe
- Technical motion ($\geq 2/3$)
- Yes: 0, no: 0, abstain 0

Dynamic discovery and negotiation

- ❑ The dynamic discovery (of masters and slaves) is done using RoE Control packets and a three-way handshake.
- ❑ The dynamic discovery allows:
 - RoE slaves (REs) to find at least one RoE master (REC) with whom to create a peer association.
 - RoE masters to dynamically discover slaves.
 - Both slaves and masters to agree on the common supported set of RoE features.
- ❑ A multicast address needs to be assigned:
 - E.g. ALL-ROE-MASTERS

Control packet subtypes

- ❑ SOLICIT – slave to master (multicast)
 - Subtype 0x01.
 - Advertise supported & desired set of features.
- ❑ ADVERTISE – master to slave (unicast)
 - Subtype 0x02.
 - Describe supported & selected set of features.
- ❑ CONFIRM – slave to master (unicast)
 - Subtype 0x03.
 - Announce approval. After this master may start data transmission.

Protocol operation (slave)

- ❑ Slave sends the SOLICIT packet with its capabilities to the ALL-ROE-MASTERS multicast address.
- ❑ Slave waits maximum MAX_TIMEOUT for ADVERTISE packets from masters or may also continue after receiving MIN_ADVERTISE_RECEIVED ADVERTISE packets (1 to n packets).
- ❑ If zero replies were received, wait for MAX_RETRY_DELAY and repeat solicitation maximum MAX_RETRY times.
- ❑ From received ADVERTISE packets learn the common set of capabilities and unicast CONFIRM to the master.
 - Slave may create peer association with more than one master if it so desires.
- ❑ Slave proceeds to "RoE link" start-up phase. If there is no RoE data arriving from the master within MAX_UP_DELAY, the slave drops the peer association and may retry the whole discovery procedure.
- ❑ ADVERTISE packets received in a wrong "state" and silently discarded.

Protocol operation (master)

- ❑ Master listens to SOLICIT packets to arrive at the ALL-ROE-MASTERS multicast address.
- ❑ After receiving a SOLICIT packet the master checks if the SOLICIT contains agreeable set of capabilities OR if it can add a new slave in general. If not the SOLICIT is discarded.
- ❑ The master composes the agreeable capability and unicasts ADVERTISE packet to the slave. A peer association with the new slave is created.
- ❑ The master waits for the CONFIRM packet to arrive. If no answer is received within MAX_CONFIRM_DELAY, the slave peer association is dropped.
- ❑ Master proceeds to "RoE link" start-up phase with the new slave.
- ❑ SOLICIT and CONFIRM packets received in a wrong "state" and silently discarded.

Packet formats

- The required three control packet formats are TBD.

Motion

- Accept the dynamic discovery procedure and control message types described in tf3_1508_korhonen_start_up_nego_4.ppt pages 7-10 as a baseline.

- John Doe making the motion
- Seconded by Jane Doe

- Technical motion ($\geq 2/3$)

- Yes: 0, no: 0, abstain 0