# Short Address Assignment in IEEE 802.15.10

Source:

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Re: 802.1CQ Project, 802.1 Data Center Bridging Task Group

Venue:
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Abstract:
   This document describes the short address assignment protocol in IEEE Std 802.15.10. This contribution is intended for discussion regarding whether the protocol should be described or mentioned in P802.1CQ ("Draft Standard for Local and Metropolitan Area Networks: Multicast and Local Address Assignment").

# Short Address Assignment in 802.15.10

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# Key points

- P802.1CQ ("Multicast and Local Address Assignment") "specifies protocols, procedures, and management objects for locally-unique assignment of 48-bit and 64-bit addresses in IEEE 802 networks. Peer-to-peer address claiming and address server capabilities are specified."

- IEEE 802.15.10: "IEEE Recommended Practice for Routing Packets in IEEE 802.15.4™ Dynamically Changing Wireless Networks" uses 64-bit "extended addresses" but can also assign 16-bit "short addresses"

These are not local MAC addresses, so the method is technically out of scope of P802.1CQ.

- Should P802.1CQ developers be familiar with that method?

- Should P802.1CQ summarize the method of 802.15.10?

# 802.15.10 (Assignment)

IEEE 802.15.10, subclause 5.1.2.5.1: "*Initial short address assignment*"

- *If a device wants to be assigned a short address, its next higher layer sends an L2RLME-AA-RQ.request primitive to the L2R sublayer.*

  - "AA" means <u>address assignment</u>

- *Upon receiving the primitive, the L2R sublayer [initiates] an MP frame with an address assignment request (AA-RQ) IE … to the coordinator…*

- *The device sets the Allocated Address field of the AA-RQ IE to a short address that it wishes to be assigned or that it has already been assigned… The Expiration Time field is set to the duration for which the device expects to use the short address, or to 0x00 for an indefinite duration.*

# 802.15.10 (Assignment) [continued]

- *When the mesh root receives the AA-RQ IE, the L2R sublayer issues an L2RLME-AA-RQ.indication to the next higher layer which delivers the AA-RQ IE to the PAN coordinator which manages and assigns all the short addresses.*

- *If the short address retrieved from the Allocated Address field is available, the PAN coordinator records the AA.  If the requested short address is not available, the PAN coordinator allocates a new short address and records the AA.*

- *If the expiration time requested by the source of the AA-RQ IE is allowed, the PAN coordinator records the expiration time of the AA; otherwise, the expiration time is set to the maximum expiration time allowed.*
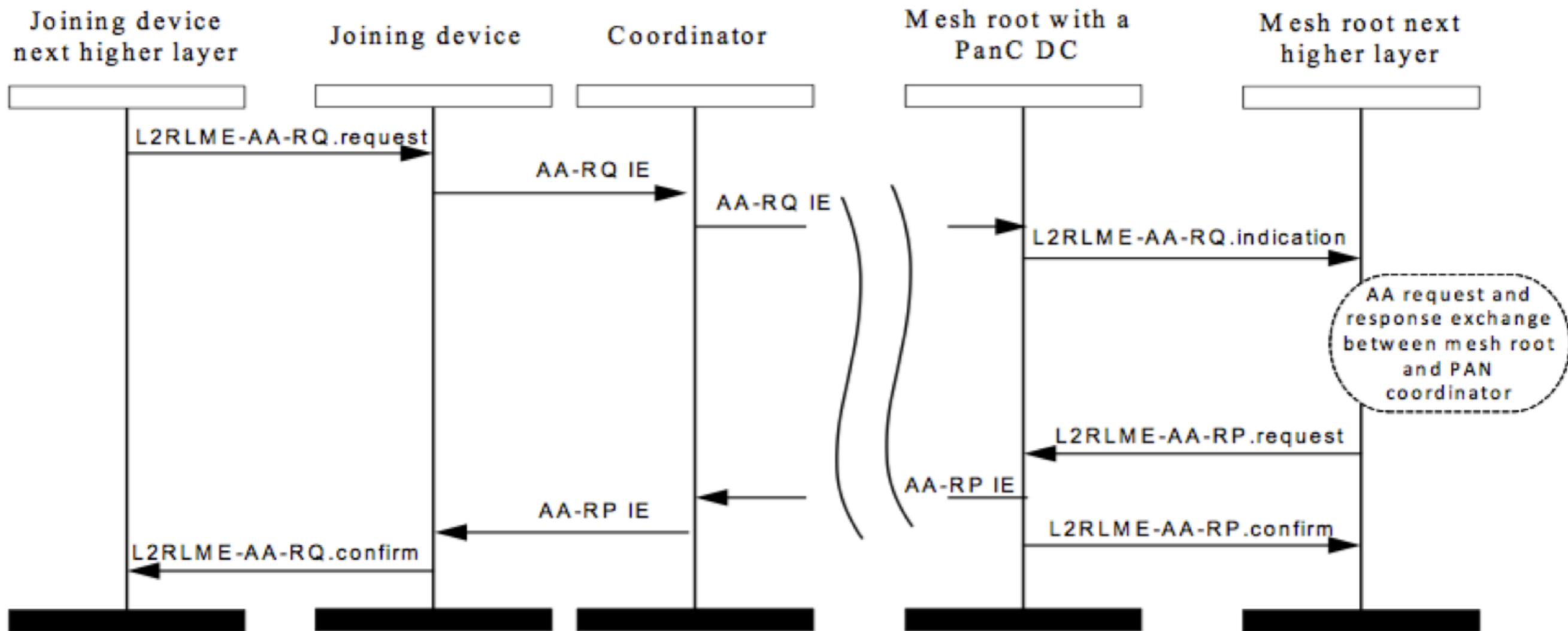
# Assignment Request/Reply Message Sequence



**Figure 5-9—Message sequence chart for initial short AA**

# 802.15.10 (maintenance)

- IEEE 802.15.10 subclause 5.1.2.5.2 ("Short address maintenance"):

  - *If a device wishes to continue to use a short address, it repeats the short AA procedure described in before the expiration of the short address.*

# 802.15.10 (release)

- IEEE 802.15.10 subclause 5.1.2.5.3: "5.1.2.5.3 Short address release"

    - *"If a device no longer needs a previously assigned short address, it informs the PAN coordinator by transmitting an address release (A-RLS) IE through a mesh root with a PanC DC"*

# Summary

- 802.15.10 specifies protocol messages for "short address assignment"

- The protocol take advantage of the fact that the device has a unique routable address (the 64-bit extended address) before it is assigned a local address.

  - Other protocols considered by P802.1CQ may operate quite differently if they lack this advantage.