Bridging 64-bit MACs with 48-bit MACs

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OmniRAN TG

- 802.1CF or OmniRAN TG is working on point to point link versus shared link issues on all IEEE 802 technologies, including 802.15
- OmniRAN is interested in only the 802 technologies that are compatible with 802.3 or Ethernet
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64-bit MACs vs 48-bit MACs

- There are nodes connected to two IEEE 802 technologies like 802.15 and 802.3
- This brings MAC frame format incompatibilities especially MAC addresses

Where to Bridge in the PAN?

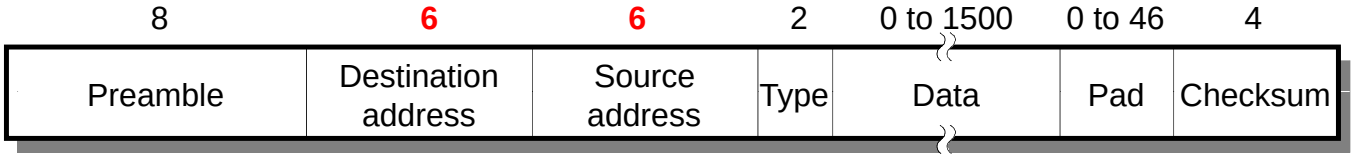
- Scenario 1. At the PAN Coordinator
- Scenario 2. At lower levels in the PAN

Frame Formats

- 802.15.4 MAC Data Frame

Octets:2	1	4 to 20	variable	2
Frame control	Data sequence number	Address information	Data payload	Frame check sequence
MAC header			**MAC Payload**	**MAC footer**

- 802.3 MAC Data Frame



802.15.4 to 802.3 Adaptation

- 802.15.4 MAC address long format is 64 bits or 8 octets, 802.3 supports 48 bit MAC address, i.e. 6 octets
- Some 802.15.4 PHY limit MPDUs to 127 octets, 802.3 has 1500 octet MPDUs

MAC address adaptation

- 48-bit MAC addresses can be converted into 64-bit addresses as in IEEE Guidelines
- But the reverse conversion is not defined
- New developments in this area include 802c PAR dealing with local addresses

MPDU Size for 802.15

- 802.15 amendments that can support 1500 octets: 802.3d, 802.15.4g, 802.15.4m
- Even other 802.15 technologies that have smaller MPDU sizes like 127 octets in 802.15.4.e
- Ethernet can carry frame sizes 64 to 1500 octets

Timing Considerations

- Bridge keeps a frame for a maximum of 1sec until it reaches the destination
- This value can be increased to 4sec maximum value
- 802.15 has sleeping nodes (4e, 4f, 4k, 15.1, 15.6)
- The work has to address this issue
- There are wakeup frames defined in 802.15.4e, 4k
- Ways to wake up in other cases

Thank you!

Questions