**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | **Proposed comment resolution for i-48 from the sponsor ballot** | |
| Date Submitted | 26 July 2016 | |
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| Re: | 802.15.10 Consolidated Sponsor Ballor Comments, CID i-48 | |
| Abstract | Provides a proposed resolution to CID i-48 | |
| Purpose | To be used by the technical editor to apply the necessary changes to the draft to resolve CID i-48 | |
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**Comments**

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| **CID** | **Page** | **Clause** | **Line** | **Comment** | **Proposed change** |
| i-92 | 118 | 7.2.1 | 9 | How does the multicast frame sending work. Musticast frames have short addresses as destination addresses, but here it says the address mode depends on the MeshAddressMode. | Specify how multicast frame sending works. |
| i-106 | 121 | 7.2.3 | 48 | How does the multicast frame receiving work. The FnlDestAddr is in short address format, even if the mesh uses long addresses, so the MeshAddressMode cannot be used to know the format of FnlDestAddr format. | Explain how multicast receiving works. |

**Resolution: Revise**

* ***Create a new L2IB attribute as follows***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute** | **Type** | **Range** | **Description** | **Default** |
| *l2rMulticastAddressList* | List of (Address mode, address) tuple | (Short address, 0xff00 – 0xfffd), (Extended address, any 64-bit multicast group address) | List of addresses of the multicast groups of which the device is a member | \_\_ |

* ***Modify 5.2.6 as follows:***

An implementation may require the transmission of the same data to a group of devices based on criteria such as geographic location (district, block, floor…), device type (actuators, sensors…), etc. These devices are organized into static and administratively defined multicast groups. A multicast group may be assigned a short address within the interval of 0xff00 to 0xfffd, or with a 64-bit multicast group address. 64-bit multicast addresses should be defined by the implementer if used. The management of the groups is out of the scope of this document. Multicast routing is handled by the L2R sublayer if the L2R multicast parameter of the corresponding MT is TRUE. Otherwise, multicast frames are treated as broadcast frames by the L2R sublayer and are filtered by higher layers.

Multicast route establishment is achieved through the transmission of RA IEs. If a device belongs to a multicast group and if multicast routing is handled by the L2R sublayer, the next higher layer informs the L2R sublayer with an L2R-MULTICAST-SUBSCRIPTION.request primitive. Upon reception of the primitive, the L2R sublayer includes the multicast address(es) in its RA IEs. The L2R sublayer also holds the multicast address(es) in *l2rMulticastAddressList*. If the device is the mesh root, the L2R sublayer records the devices multicast address(es) in *l2rMulticastAddressList* but does not transmit RA IEs.

After the transmission of the RA IE with the multicast subscription information, the L2R sublayer notifies the next higher layer with an L2R-MULTICAST-SUBSCRIPTION.confirm primitive. This procedure is illustrated in Figure 19. The L2R-MULTICAST-SUBSCRIPTION.request and L2R-MULTICAST-SUBSCRIPTION.confirm primitives are described in 7.1.3.1 and 7.1.3.2 respectively. If a device has left a multicast group, the next higher layer informs the L2R sublayer with the L2R-MULTICAST-SUBSCRIPTION.request with the corresponding multicast address omitted. The change is reflected in the next scheduled RA IE and in *l2rMulticastAddressList*.

* ***Modify the 5.4.2 as follows:***

Multicast routing is handled by the L2R sublayer in an L2R mesh if L2R Multicast in the corresponding MT is TRUE.

When multicast routing is handled at the L2R sublayer in a regular mesh (i.e. not in an SSPAN nor a TMCTP), if a frame is to be sent to a multicast group, the next higher layer requests data routing with the L2R-DATA.request primitive where Multicast is set to TRUE, DestAddr is set to the multicast address and DestAddrMode is set to the corresponding address mode. If the original source of the multicast frame is a device other than the mesh root, the frame is first routed to the mesh root through US routing with the multicast address as the DA in the L2R Routing IE. If the original source is the mesh root or when the mesh root receives a multicast frame, it forwards the frame DS with the broadcast address as the NHA. If the mesh root is also a member of the multicast group, its L2R sublayer delivers a copy of the frame to the next higher layer with the L2R-DATA.indication primitive where Multicast is set to TRUE, DestAddrMode is set to the appropriate address mode and DestAddr is set to the multicast address.

From then on, a device receiving the frame forwards it only if it has a DS route to at least one member of the multicast group as indicated by the multicast address found in the list of reachable destinations of at least one neighbor, and the NHA is always set to the broadcast address. If a receiving device is a member of the multicast group, the frame is delivered to the next higher layer with the L2R-DATA.indication primitive. If the member of the multicast group also has other members among its descendants, the frame is duplicated and forwarded.

When a device receives a multicast frame for the first time, it records the LSN and the SA. If it receives another frame with the same LSN and SA, the frame should be dropped. This record is deleted after *l2rSnSaRecordTimeout*. Figure 31 illustrates the processing of a multicast data frame by the original source; Figure 32 illustrates the processing of a multicast data frame by an intermediate hop.

* ***Modify Figure 61 as follows:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Bits:0-3** | **5-7** | **Octets: 2** | **2** | **…** | **0/2** |
| Number of Multicast Addresses | Reserved | Address Mode Bitmap | Multicast Address 1 | … | Multicast Address M |

* ***Insert the following text after the first paragraph of p.89***

The each bit *i* (*i* = 0, ..., 15) of the Address Mode Bitmap field indicates the address mode contained in the Multicast Address *i*+1 field. 0 indicates a short address and 1 indicates an extended address. If the Number of Multicast Addresses contains a value smaller than 15, the unused bits are set to 0 by the transmitter and ignored by the receiver.

* ***Modify the List of reachable multicast groups in Table 4 as follows:***

|  |  |  |  |
| --- | --- | --- | --- |
| List of reachable multicast groups | List of (address mode, multicast address) tuples | (Short address, 0xff00 – 0xfffd), (Extended address, any 64-bit multicast group address) | List of multicast groups reachable through the neighbor. |

* ***Modify Figure 32 as follows:***

