**IEEE P802.15**

**Wireless Personal Area Networks**

|  |  |  |
| --- | --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | Draft text of peering related command for TG8 | |
| Date Submitted | May 2015 | |
| Source | Huan-Bang Li (NICT)  Marco Hernandez (NICT)  Igor Dotlić (NICT)  Ryu Miura (NICT) |  |
| Re: | TG8 draft text for peering related command for 802.15.8 | |
| Abstract | This is the work in progress text of the MAC component for IEEE 802.15.8 group for PAC. | |
| Purpose | This document provides the details of draft text to IEEE 802.15.8 | |
| Notice | This document does not represent the agreed views of the IEEE 802.15 Working Group or IEEE 802.15.8 Task Group. It represents only the views of the participants listed in the “Source(s)” field above. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. | |
| Release | The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15. | |
| Patent Policy | The contributor is familiar with the IEEE-SA Patent Policy and Procedures:  <http://standards.ieee.org/guides/bylaws/sect6-7.html#6> and  <http://standards.ieee.org/guides/opman/sect6.html#6.3>.  Further information is located at <http://standards.ieee.org/board/pat/pat-material.html> and  <http://standards.ieee.org/board/pat>. | |

# [This is draft text for subclause of Peering related command for TG8]

# MAC Layer

**5.3 MAC command frames**

The command frames defined by the MAC sublayer are listed in Table 5. A PD shall be capable of transmitting and receiving all command frame types. MAC commands shall not be transmitted in the CFP.

MAC command reception shall abide by the procedure described in 5.1.2.2.

**Table 5—MAC command frames**

|  |  |  |
| --- | --- | --- |
| **Command frame**  **identifier** | **Command name** | **Subclaus** |
| 0x01 | One-to-one peering request | X.x.1 |
| 0x02 | One-to-one peering response | X.x.2 |
| 0x03 | One-to-one re-peering request | X.x.3 |
| 0x04 | One-to-one re-peering response | X.x.4 |
| 0x05 | One-to-one de-peering request | X.x.5 |
| 0x06 | One-to-one de-peering response | X.x.6 |
|  |  |  |
|  |  |  |
| 0x0a-0xff | Reserved |  |

**5.3.1 One-to-one peering request command**

The one-to-one peering request command allows a PD to request peering with another PD.

This command shall only be sent by a PD that wishes to peer with another PD. A PD shall only peer with another PD through the one-to-one peering procedure.

All PDs shall be capable of transmitting and receiving this command.

The one-to-one peering request command shall be formatted as illustrated in Figure 49.

|  |  |  |
| --- | --- | --- |
| **Octets: variable** | **1** | **1** |
| MHR fields | Command Frame Identifier | Capability Information |

**Figure 49—One-to-one peering request command format**

**5.3.1.1 MHR fields**

The Source Addressing Mode field and the Destination Addressing Mode field shall be set to indicate 64-bit addressing.

The Frame Pending field shall be set to zero and ignored upon reception, and the AR field shall be set to one.

The Destination PD Identifier field shall contain the identifier of the PD to which to peer with. The Destination Address field shall contain the address of the PD to which the peering request command is being sent. The Source PD Identifier field shall contain PD’s own identifier. The Source Address field shall contain the value of *macAddress*.

**5.3.1.2 Capability Information field**

The Capability Information field shall be formatted as illustrated in Figure 50.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bits 0** | **1** | **2** | **3** | **4-5** | **6** | **7** |
| Reserved | Device Type | Power Source | Receiver On When Idle | Reserved | Security Capability | Reserved |

**Figure 50—Capability Information field format**

The Device Type field shall be set to one if the PD is used at a fixed location. Otherwise, the Device Type field shall be set to zero to indicate a moving PD.

The Power Source field shall be set to one if the PD is receiving power from the alternating current mains. Otherwise, the Power Source field shall be set to zero.

The Receiver On When Idle field shall be set to one if the device does not disable its receiver to conserve power during idle periods. Otherwise, the Receiver On When Idle field shall be set to zero.

The Security Capability field shall be set to one if the device is capable of sending and receiving cryptographically protected MAC frames as specified in 7.2; it shall be set to zero otherwise.

**5.3.2 One-to-one peering response command**

The one-to-one peering response command allows a PD to communicate the results of a one-to-one peering attempt back to the PD requesting peering.

This command shall only be sent by a PD that receives a peering request, to a PD that is currently sending the peering request.

All PDs shall be capable of receiving this command.

The peering response command shall be formatted as illustrated in Figure 51.

|  |  |  |  |
| --- | --- | --- | --- |
| **Octets: variable** | **1** | **2** | **1** |
| MHR fields | Command Frame Identifier | Short address | Peering Status |

**Figure 51—One-to-one peering response command format**

**5.3.2.1 MHR fields**

The Destination Addressing Mode and Source Addressing Mode fields shall each be set to indicate 64-bit addressing.

The Frame Pending field shall be set to zero and ignored upon reception, and the AR field shall be set to one.

The Destination PD Identifier field shall contain the value of *macPeerID*, while the Source PD Identifier field shall contain the PD’s own identifier. The Destination Address field shall contain the 64-it address of the PD requesting peering. The Source Address field shall contain the value of *macAddress*.

**5.3.2.3 Peering Status field**

Valid values of the Peering Status field are defined in Table 6.

|  |  |
| --- | --- |
| **Peering Status** | **Description** |
| 0x00 | Peering successful |
| 0x01 | Peering failed |
| 0x02 | Peering denied |
| 0x03-0x7f | Reserved |
| 0x80-0xff | Reserved for MAC primitive enumeration values |

**Table 6—Valid values of the Peering Status field**

**5.3.3 One-to-one Re-peering request command**

The one-to-one re-peering request command allows a PD to request re-peering with a previously peered PD.

This command shall only be sent by a PD that wishes to re-peer with a previously peered PD. A PD shall only re-peer with a previously peered PD through the one-to-one re-peering procedure.

All PDs shall be capable of transmitting and receiving this command.

The one-to-one re-peering request command shall be formatted as illustrated in Figure 52.

|  |  |  |
| --- | --- | --- |
| **Octets: variable** | **1** | **1** |
| MHR fields | Command Frame Identifier | Capability Information |

**Figure 52—One-to-one re-peering request command format**

**5.3.3.1 MHR fields**

The Source Addressing Mode field and the Destination Addressing Mode field shall be set to indicate 64-bit addressing.

The Frame Pending field shall be set to zero and ignored upon reception, and the AR field shall be set to one.

The Destination PD Identifier field shall contain the identifier of the PD to which to re-peer with. The Destination Address field shall contain the address of the PD to which the re-peering request command is being sent. The Source PD Identifier field shall contain PD’s own identifier. The Source Address field shall contain the value of *macAddress*.

**5.3.4 One-to-one re-peering response command**

The one-to-one re-peering response command allows a PD to communicate the results of a one-to-one re-peering attempt back to the PD requesting re-peering.

This command shall only be sent by a PD that receives a re-peering request, to a PD that is currently sending the re-peering request.

All PDs shall be capable of receiving this command.

The re-peering response command shall be formatted as illustrated in Figure 53.

|  |  |  |  |
| --- | --- | --- | --- |
| **Octets: variable** | **1** | **2** | **1** |
| MHR fields | Command Frame Identifier | Short address | Peering Status |

**Figure 53—One-to-one re-peering response command format**

**5.3.4.1 MHR fields**

The Destination Addressing Mode and Source Addressing Mode fields shall each be set to indicate 64-bit addressing.

The Frame Pending field shall be set to zero and ignored upon reception, and the AR field shall be set to one.

The Destination PD Identifier field shall contain the value of *macPeerID*, while the Source PD Identifier field shall contain the PD’s own identifier. The Destination Address field shall contain the 64-it address of the PD requesting peering. The Source Address field shall contain the value of *macAddress*.

**5.3.5 One-to-one de-peering request**

A peered PD may send the one-to-one de-peering request.

All PDs shall implement this command.

The one-to-one de-peering request shall be formatted as illustrated in Figure 54.

|  |  |  |
| --- | --- | --- |
| **Octets: variable** | **1** | **1** |
| MHR fields | Command Frame Identifier | De-peering reason |

**Figure 54—One-to-one de-peering request command format**

**5.3.5.1 MHR fields**

The Source Addressing Mode field shall be set to indicate 64-bit addressing.

The Frame Pending field shall be set to zero and ignored upon reception, and the AR field shall be set to one.

The Destination PD Identifier field shall contain the value of *macPeerId*, while the Source PD Identifier field shall contain the PD’s own identifier. If a PD wants a peered PD to be de-peered, then the Destination Address field shall contain the address of the PD being de-peered. If a peered PD wants to de-peer, then the Destination Address field shall contain the value of either *macCoordShortAddress*, if the Destination Addressing Mode field is equal to two, or *macCoordExtendedAddress*, if the Destination Addressing Mode field is equal to three. The Source Address field shall contain the value of *macAddress*.

**5.3.5.2 De-peering Reason field**

Valid values of the One-to-one De-peering Reason field are defined in Table 7.

**Table 7—Valid de-peering reason codes**

|  |  |
| --- | --- |
| **De-peering reason** | **Description** |
| 0x00 | Reserved |
| 0x01 | The PD is de-peered |
| 0x02 | The PD wishes to de-peer |
| 0x03-0x7f | Reserved |
| 0x80-0xff | Reserved for MAC primitive enumeration valves |

**5.3.6 One-to-one De-peering response command**

The one-to-one de-peering response command allows a PD to communicate the results of a one-to-one de-peering attempt back to the PD requesting de-peering.

This command shall only be sent by a PD that receives a de-peering request, to a PD that is currently sending the de-peering request.

All PDs shall be capable of receiving this command.

The de-peering response command shall be formatted as illustrated in Figure 55.

|  |  |  |  |
| --- | --- | --- | --- |
| **Octets: variable** | **1** | **2** | **1** |
| MHR fields | Command Frame Identifier | Short address | Peering Status |

**Figure 55—One-to-one de-peering response command format**

**5.3.6.1 MHR fields**

The Destination Addressing Mode and Source Addressing Mode fields shall each be set to indicate 64-bit addressing.

The Frame Pending field shall be set to zero and ignored upon reception, and the AR field shall be set to one.

The Destination PD Identifier field shall contain the value of *macPeerID*, while the Source PD Identifier field shall contain the PD’s own identifier. The Destination Address field shall contain the 64-it address of the PD requesting de-peering. The Source Address field shall contain the value of *macAddress*.