**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | Suggested Text for Peering to Resolve Comment CID-75 | |
| Date Submitted | March 2017 | |
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| Re: | TG8 draft text for comment resolution 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 | |
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# [This is draft text to resolve comment submitted to TG8]

* + - 1. Peering description

The next higher layer may attempt to peer after PDs are discovered. The results of discovery are used to peer with other PDs.

A Requestor PD higher layer requests to peer with a Responder PD or a number of Responder PDs through the MLME-PEERING.request primitive with the following parameters:

1. Supported Channel Page (indicating the supported frequency bands of Requestor PD).
2. Channel Number (indicating the channel number requested to perform the peering in the current channel page of the Requestor PD).
3. Group ID (Responder PD’s Group ID).
4. Destination Address (MAC address of the Responder PD).
5. Multicast Address (if available, multicast address of the PAC group).

The selection of a new channel page and channel number is performed in higher layers and it is out of the scope the standard.

The MAC sublayer of a Requestor PD shall initiate the peering procedure by sending a Peering Request command, described in 6.11.3, to a Responder PD or a number of Responder PDs. If the Peering Request command cannot be sent due to a channel access failure, the MAC sublayer shall notify the next higher layer through the MLME-PEERING.confirm primitive with the status of CHANNEL\_ACCESS\_FAILURE.

The Immediate Acknowledgment frame sent by a Responder PD in response to the reception of a Peering Request command frame does not mean that the peering has been accepted, but just that the Peering Request command frame has been received by the Responder PD. If such Responder PD determines that either there is sufficient resource available for the peering with the Requestor PD or conversely there is not, the MAC sublayer of Responder PD shall generate a Peering Response command frame, as described in 6.11.4, accordingly.

The MAC sublayer of a Responder PD shall generate and send a Peering Response command frame upon reception of MLME-PEERING.response primitive, indicating if the PD accepts or rejects the request to peer. That includes the SupportedChannelPage parameter indicating the support s by the Responder PD.

On receipt of the Immediate Acknowledgment frame, a Requestor PD shall start a timer and wait for either the arrival of the Peering Response command frame or the timer reaches the value of *macPeeringResponseTimeout* (see Table 81 PAC information base). The *macPeeringResponseTimeout* parameter depends on a particular application, PAC network topology and may be set to match the specific requirements of the PAC group the Requestor PD is trying to join.

The Peering Response command frame shall include the SupportedChannelPage field, which contains a list of the frequency bands supported by the Responder PD, and the Status field that indicates “Successful” in case the requested channel number in the current channel page of Requestor PD is accepted for peering, or “Access denied” otherwise. The selection of a new channel page and/or channel number is performed in higher layers and it is out of the scope of the standard.

If the Status parameter of the Peering Response command frame indicates “Successful”, a Requestor PD shall store the parameters of the Responder PD required for peering and shall issue the MLME.PEERING.confirm primitive to the next higher layer.

If the Status parameter of the Peering Response command frame does not indicate “Successful”, a Requestor PD shall discard the Responder PD parameters indicated in the previous list: from a) to e), and issue the MLME-PEERING.confirm primitive to the next higher layer with Status parameter of either OUT\_OF\_CAPACITY or ACCESS\_DENIED.

If a Requestor PD does not receive the Immediate Acknowledgment frame, or Peering Response command frame within *macPeeringResponseTimeout*, the Requestor PD shall discard the Responder PD parameters indicated in the previous list: from a) to e), and issue the MLME-PEERING.confirm primitive to the next higher layer with the Status parameter of NO\_ACK, or CHANNEL\_ACCESS\_FAILURE, accordingly.

The step by step descriptions of peering procedures are respectively given in the following subclauses.

Figure 30 illustrates the sequence of messages of the one-to-one peering procedure. The result of one-to-one peering is that the Requestor PD is peered with the Responder PD that accepted the request to peer. The one-to-one peering procedure shall contain the following steps:

1. The Requestor PD’s higher layer triggers the one-to-one peering procedure by issuing the MLME-PEERING.request primitive to its MAC sublayer.
2. Upon reception of the MLME-PEERING.request primitive, the Requestor PD’s MAC sublayer sends the Peering Request command frame to the Responder PD.
3. Upon reception of a Peering Request command frame, the Responder PD shall send an Immediate Ack frame to the Requestor PD as well as issue the MLME-PEERING.indication primitive to its next higher layer, indicating one-to-one peering request with the Peering Type parameter set to ONE2ONE.
4. The Responder PD’s higher layer receiving the MLME-PEERING.indication primitive decides either to accept or reject the request to peer within *macPeeringResponseTimeout*. The next higher layer of Responder PD shall issue a MLME-PEERING.response primitive to its MAC sublayer if it decides to send a Peering Response command frame.
5. Upon reception of the MLME-PEERING.response primitive, the MAC sublayer of the Responder PD shall send the Peering Response command frame to the Requestor PD.
6. Upon reception of the Peering Response command frame, the Requestor PD shall send an Immediate Ack frame as well as issue the MLME-PEERING.confirm primitive with Status parameter of either SUCCESFUL or the error code ACCESS\_DENIED or OUT\_OF\_CAPACITY.



Figure 30— One-to-one peering message sequence chart