**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 Many-to-Many Discovery to Resolve Comment CID-35 |
| Date Submitted | January 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. Discovery procedure for many-to-many group

Many-to-many discovery is defined for a group of mutual neighbour PDs. Mutual neighbour PDs means that any PD in the group shall be able to communicate with all other PDs of the group. Therefore, physical links must be available between any pair of PDs. Procedure for many-to-many discovery includes phase 1 and phase 2 and follows the steps as shown in Figure xx.

Phase 1;

1. The higher layer of an Initiator PD (I-PD) triggers the two-way discovery procedure by issuing the MLME-DISCOVERY.request with the parameter Discovery Type set to TWO-WAY-UNTARGETED.
2. Upon reception of the MLME-DISCOVERY.request primitive, the I-PD’s MAC sublayer broadcasts the Discovery Request command frame.
3. Each of the other PDs that captured the Discovery request sends an MLME-DISCOVERY.indication to its higher layer indicating two-way untargeted discovery request with the Discovery Type parameter.
4. The next higher layer of each Responder PD (R-PD) shall issue a MLME-DISCOVERY.response primitive to its MAC sublayer, if the PD agreed to send the Discovery Response command frame to the I-PD.
5. Upon reception of the MLME-DISCOVERY.response primitive, the R-PD’s MAC sublayer shall send the Discovery Response command frame to the I-PD during the CAP.
6. Upon reception of the Discovery Response command frame, the I-PD shall send an Immediate Ack frame.
7. If the Immediate Ack frame is not received, the R-PD shall notify the next higher layer by issuing the MLME-COMM-STATUS.indication primitive with the status parameter set to NO\_ACK.
8. As soon as the I-PD broadcasts the Discovery Request command frame, the I-PD shall monitor the CAP for possible Discovery Response command frames. The I–PD collects a list of initial responded R-PDs and reports the initial R-PDs’ list to the next high layer using MLME-DISCOVERY.confirm primitive.

Phase 2;

1. The I-PD’s next higher layer issues the MLME-DISCOVERY.request with the parameter Discovery Type set to MANY2MANY and Destination Address parameter set to the MAC address of one of the initial R-PDs in the list obtained at step h).
2. Upon reception of the MLME-DISCOVERY.request primitive, the I-PD’s MAC sublayer sends the Discovery Request command frame.
3. Upon reception of the Discovery Request command frame, the R-PD’s MAC sublayer shall broadcast the Discovery Response command frame during the CAP with a PDs list starting from the I-PD followed by R-PDs, whose Discovery Response command frames were captured by the current R-PD.
4. The I-PD re-sends Discovery Request command frame if the I-PD does not receive the Discovery Response command frame from the R-PD until reaching the *macMaxFrameRetries*.
5. The I-PD’s MAC sublayer shall issue the MLME-Discovery.confirm primitive with the corresponding list of captured R-PDs of the current R-PD or status of Failure depending on whether the Discovery Response command frame is received or not.
6. The steps from i) to m) are iterated until Discovery Request command frame has been sent to all R-PDs in the initial R-PDs list.
7. The next higher layer of the I-PD obtains a list of PDs qualified for the many-to-many group.
8. The next higher layer of the I-PD may form a many-to-many group following the procedure as defined in subclause xxx, many-to-many peering procedure.



Figure xx—Discovery procedure sequence chart for forming many-to-many group