**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title |  |
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| Re: |  |
| Abstract | Comments on list of functionalities extracted from the TGD and from the proposals in the document,15-14-0520-00 |
| Purpose | This document is to suggest some comments on functionalities listed in 15-14-0520-00 to be used to compare the proposals |
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**Introduction**

This document is prepared to suggest some comments on the functionalities listed in 15-14-0520-00. Red parts in the following tables are the comments and/or possible modifications to be suggested in this document.

1. **Functionalities from the TGD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Functionality** | **NICT** | **OKI** | **ETRI 1(Hybrid L2R)** | **ETRI 2 (TCT)** |
| Mesh topology discovery | Yes(enhanced beacons)Topology: Hierarchical mesh tree | Yes(Hello frames)Topology: Tree | Yes(PANN and PANN RP)Topology: Tree, **mesh (Inter PAN routing)** | Yes(Link setup request/response)Tiered cluster tree |
| Mesh Routing | Yes-US: Hop-by-hop from child to parent or brother using neighbor table-DS:  \* Hop-by-hop parent to child or brother using neighbor table,  \* Proactive source routing-P2P: Combination of US and DS | Yes-US: Hop-by-hop child to parent using neighbor table-DS: source routing-P2P: Combination of US and DS | Yes-US, DS: Hop-by-hop using routing table-P2P: route establishment with PREQ and PREQ RP, then Hop by hop using routing table | Yes-US, DS, P2P: using cluster table and route table  |
| Extensible mesh routing architecture (metric alternative, selection, notification, new metrics) | Using the Link quality metric field in EB for 1 or more metrics | Using the Neighbor metric container in Hello frames for 1 or more metrics | Using the Metric field in PANN and PREQ for 1 metric |  |
| Unicast | Yes | Yes | Yes | Yes |
| Broadcast | Yes: packet forwarded once if at least 1 child exists | Flooding with random jitter  | Flooding based.  |  |
| Route discovery | Proactive | Proactive | US/DS: ProactiveP2P: reactive | Proactive |
| Low power operation | To see from the simulations results |
| Mesh Security | Only devices from the same PAN sharing the same security credentials can belong to a routing tree  | KMP | **Associated device only (for Beacon enabled PAN)****Only devices from the same PAN (for non-beacon mode)** |  |
| **Multi-channel aware** | **No** | **No** | **YES (TMCTP)** | **NO** |
| Routing metrics | Any metric.SINR used in simulation | Any metric.Hop count used in simulation | **Any metric.**Inactive Overhead Aware Link Metric **in simulation** | -Link cost: Function of link type, link quality, load balance-Route cost: number of hops |
| Discovery and association | EBR/EB | Hello request/Hello | PANN/PANN RP | Link setup request/ link setup response |
| Network acknowledgement | Not specified | E2E-ACK | Not specified | Not specified |
| Addressing modes | 16/64 bits | 16/64 bits | 16/64 bits | 16 bits (c-skip) |
| Changes to the MAC and PHY | New IEs-HMT construction IE-L2R routing IE-Data aggregation IE-Destination announcement IE | New IE with nested IEs-L2R IE \*Address list IE \*Hello Param IE \*Routing Instance IE \*Hello request parameter IE\*Route record parameter IE\*MGT request parameter IE\*MGT response parameter IE\*KMP relay parameter IE\*FA notification parameter IE\*FA channel update IE\*MC request parameter IE\*MC response parameter IE\*Neighbor metrics container IE\*PIB ID list IE \*KMP content IE | New IEs- PANN- PANN-RP- PREQ- PREQ-RP | New IEs-L2R IE \*setup req\*release req\*Hello req\*setup resp\*release resp\*hello resp-L2R payload IE\*Cluster req\*Update req\*Leave req\*flow req\*cluster resp\*Update resp\*leave resp\*flow\_resp |
| Multiple entry and exit points | YesUsing the service/gateway, Tree root IDs fields |  | **Yes** **Using the multiple PANN messages from multiple gateways**  |  |

1. **Other functionalities**

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| --- | --- | --- | --- | --- |
| **Functionality** | **NICT** | **OKI** | **ETRI 1(Hybrid L2R)** | **ETRI 2 (TCT)** |
| Cross PAN routing | n/a | n/a | Yes | n/a |
| Data aggregation | Yes | n/a | n/a | n/a |
| High reliability (retransmission to alternative neighbor) | Yes | n/a | n/a | n/a |
| Multicast routing | YesUsing multicast subscription IE |  | **Yes****Using multicast option field in routing table and control messages** |  |