Mesh Networks

IEEE 802.15.5

C. Moustakakis
A. Baltas

Mesh Networks

Mesh networks usually consist of PAN (Personal Area Network) devices.

Two connection arrangements:

- Full mesh topology
- Partial mesh topology

Mesh networks can be wired or wireless.

Mesh Networks vs ad hoc networks

Mesh are related to ad hoc networks. Actually mesh networks can be seen as a type of ad hoc networks.

Important Attributes

- Each and every node must not only send and receive its own data, but also serve as a relay for other nodes by forwarding data for them - everyone in the network contributes resources and cooperates. (CommunityBox!)

Important Attributes

- Nodes are able to cofigure automatically, and re-configure dynamically when needed to maintain mesh connectivity with self-healing algorithms.

Important Attributes

- Intelligent dynamic Routing. Each node participates in routing by forwarding data for others. Information is routed dynamically from source to destination over multiple hops.

Mesh networks offer

- **Redundancy in routes**: When a node fails, or leaves the network, others can still communicate, and network reroutes the information.

- **Scalable Network**: New nodes can easily join the network.

Mesh networks offer

- **Self-Healing Network:** Once restored, a node can easily rejoin the network.
- **Community Ownership.**

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Standard providing the framework that enables WPAN devices to form a stable and scalable mesh network.

Includes:

- **Network initialization**

- **Addressing**

- **Multihop unicasting**

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Two Parts:

- ## Low Data Rate

  Runs over IEEE 802.15.4 (Low Data Rate WPAN) which defines the Physical and the Data Link Layer (Layers 1 & 2) of OSI model.

  ## Also supports:

  - Multicasting

  - Reliable broadcasting

  - Portability support

  - Energy-saving function

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- ## High Data Rate

  Runs over IEEE 802.15.3 which is a MAC and Physical Layer standard for High-rate WPANs.