WHAT IS CLAIMED IS:

1. A system within a wireless network comprising:

a set of battery-powered device (BPD) nodes within the wireless network, each BPD node in the set of BPD nodes including a memory storing instructions, and a processor coupled to memory that executes the instructions; and

a joining BPD node within the wireless network, the joining BPD node including a second memory storing a network management application, and a second processor coupled to the memory that executes the network management application to:

identify, in a subset of BPD nodes within the wireless network, the set of BPD nodes as a set of potential parent nodes;

filter, based on a set of network optimization criteria, the set of BPD nodes to identify a target parent node in the set of BPD nodes, and

transmitting a request message to establish a communications link with the target parent node as a child node,

wherein the target parent node in the set of BPD nodes executes the instructions to:

receive the request message from the joining BPD node,

evaluate data associated with the joining BPD node with a set of acceptance criteria, and

upon determining that the joining BPD node meets the set of acceptance criteria, establish the communications link with the joining BPD node, wherein, upon the communications link being established, the joining BPD node is a child node to the target parent node.

2. The system of claim 1, wherein the second processor further executes the network management application to perform, based on a first criterion that is not included in the set of network optimization criteria, a pre-selection of the set of potential parent nodes from the subset of BPD nodes.

3. The system of claim 1, wherein the set of network optimization criteria includes:

a first criterion that filters the set of potential parent nodes into a first subset of potential parent nodes; and

a second criterion that filters the first subset of potential parent nodes into a second subset of potential parent nodes.

4. The system of claim 3, wherein the first criterion or the second criterion is based on:

a metric of a load size associated with each potential parent node in the set of potential parent nodes;

a metric of a number of hops associated with each potential parent node in the set of potential parent nodes;

a metric of a signal strength associated with each potential parent node in the set of potential parent nodes;

a metric of an average re-boot time associated with each potential parent node in the set of potential parent nodes;

a metric of a battery-backed route associated with each potential parent node in the set of potential parent nodes;

a metric of an IPv4 addressable route associated with each potential parent node in the set of potential parent nodes;

a metric of an IPv6 addressable route associated with each potential parent node in the set of potential parent nodes; or

a metric of one or more security credentials associated with each potential parent node in the set of potential parent nodes.

5. The system of claim 1, wherein the second memory further stores the set of network optimization criteria.

6. The system of claim 1, wherein the second processor further executes the network management application by generating a potential parent table (PPT) that lists each potential parent node in the set of potential parent nodes.

7. The system of claim 1, wherein the second processor further executes the network management application by:

in response to transmitting the request message, receiving, from the target parent node, a response message denying establishment of the communications link with the target parent node;

removing the target parent node from the set of potential parent nodes to generate an updated set of potential parent nodes; and

filtering, based on the set of network optimization criteria, the set of potential parent nodes to identify an updated target parent node.

8. The system of claim 1, wherein the set of acceptance criteria includes one or more parameters associated with a subtree of BPD nodes within a wireless network that includes the target parent node.

9. The system of claim 1, wherein the set of acceptance criteria includes at least one of:

an entry in a node table stored by the target parent node, or

a metric of a load size associated with at least the target parent node.

10. A computer-implemented method for performing node-based operations within a wireless network, the method comprising:

identifying, in a subset of battery powered device (BPD) nodes within the wireless network, a set of potential parent nodes;

filtering, based on a set of network optimization criteria, the set of potential parent nodes to generate a subset of potential parent nodes;

identifying a target parent node from the subset of potential parent nodes using the set of network optimization criteria; and

transmitting, by a joining BPD node within the wireless network, a request message to establish a communications link with the target parent node.

11. The computer-implemented method of claim 10, further comprising performing, based on a first criterion that is not included in the set of network optimization criteria, a

pre-selection of the set of potential parent nodes from the subset of BPD nodes.

12. The computer-implemented method of claim 10, wherein the set of network optimization criteria includes:

a first criterion that filters the set of potential parent nodes into the subset of potential parent nodes; and

a second criterion that filters the subset of potential parent nodes into a second subset of potential parent nodes.

13. The computer-implemented method of claim 12, wherein the first criterion or the second criterion is based on:

a metric of a load size associated with each potential parent node in the set of potential parent nodes;

a metric of a number of hops associated with each potential parent node in the set of potential parent nodes;

a metric of a signal strength associated with each potential parent node in the set of potential parent nodes;

a metric of an average re-boot time associated with each potential parent node in the set of potential parent nodes;

a metric of a battery-backed route associated with each potential parent node in the set of potential parent nodes;

a metric of an IPv4 addressable route associated with each potential parent node in the set of potential parent nodes;

a metric of an IPv6 addressable route associated with each potential parent node in the set of potential parent nodes; or

a metric of one or more security credentials associated with each potential parent node in the set of potential parent nodes.

14. The computer-implemented method of claim 10, wherein the joining BPD node stores the set of network optimization criteria.

15. The computer-implemented method of claim 10, further comprising generating a

potential parent table (PPT) that lists each potential parent node in the set of potential parent nodes.

16. The computer-implemented method of claim 10, further comprising:

in response to transmitting the request message, receiving, from the target parent node, a response message denying establishment of the communications link with the target parent node;

removing the target parent node from the set of potential parent nodes to generate an updated set of potential parent nodes; and

filtering, based on the set of network optimization criteria, the set of potential parent nodes to identify an updated target parent node.

17. A computer-implemented method for performing node-based operations by performing the steps of:

receiving, by a target parent node from a joining battery powered device (BPD) node, a request message to establish a communications link as a child node,

evaluating data associated with the joining BPD node with a set of acceptance criteria associated with a subtree of BPD nodes, and

upon determining that the joining BPD node meets the set of acceptance criteria, establishing the communications link with the joining BPD node, wherein the joining BPD node is a child node to the target parent node; or

upon determining that the joining BPD node does not meet the set of acceptance criteria, transmitting a response message denying establishment of the communications link with the target parent node.

18. The computer-implemented method of claim 17, wherein the set of acceptance criteria includes one or more parameters for the subtree of BPD nodes within a wireless network that includes the target parent node.

19. The computer-implemented method of claim 18, wherein the one or more parameters for the subtree of BPD nodes includes at least one of:

a maximum size of the subtree; or

a maximum number of hops for a given node in the subtree.

20. The computer-implemented method of claim 17, wherein the set of acceptance criteria includes at least one of:

an entry in a node table stored by the target parent node; or

a metric of a load size associated with at least the target parent node.