WHAT IS CLAIMED IS:

1. A method comprising:

detecting, by a first node in a network, a first scheduling conflict between a first transmission time associated with a first periodic beacon from the first node and a first listening window associated with receiving a second periodic beacon from a second node in the network;

determining, by the first node, a first alternate transmission time for the second node to transmit the second periodic beacon based on a second transmission time of the second periodic beacon by the second node and a position of the second node in the network;

calculating, by the first node, a second listening window to receive the second periodic beacon from the second node at the first alternate transmission time; and

listening, by the first node, for the second periodic beacon during the second listening window.

2. The method of claim 1, further comprising:

detecting a second scheduling conflict between a third transmission time of a third periodic beacon by the first node and a fourth transmission time of a fourth periodic beacon by the second node;

determining a second alternate transmission time for the first node to transmit the third periodic beacon based on the third transmission time;

transmitting, by the first node, the third periodic beacon at the third transmission time; and

transmitting, by the first node, an alternate beacon at the second alternate transmission time.

3. The method of claim 2, wherein detecting the second scheduling conflict comprises determining that an interval between the third transmission time and the fourth transmission time does not exceed a threshold amount of time that is based on a first time uncertainty for a third listening window associated with receiving the third

periodic beacon from the first node and a second time uncertainty included in a fourth listening window associated with receiving the fourth periodic beacon from the second node.

4. The method of claim 2, wherein determining the second alternate transmission time comprises:

calculating a time slot offset based on a hop count between the first node and a root node in the network; and

adding the time slot offset to a time slot number corresponding to the third transmission time.

5. The method of claim 1, wherein detecting the first scheduling conflict comprises determining that an interval between the first transmission time and the second transmission time does not exceed a threshold amount of time that is based on a time uncertainty included in the first listening window and an overhead factor.

6. The method of claim 5, wherein the time uncertainty comprises a jitter uncertainty and a drift uncertainty.

7. The method of claim 1, wherein determining the first alternate transmission time for the second periodic beacon comprises calculating a time slot number corresponding to the first alternate transmission time based on a hop count between the second node and a root node in the network, wherein the hop count represents the position of the second node in the network.

8. The method of claim 1, wherein determining the second listening window comprises determining a time uncertainty associated with receiving the second periodic beacon based on a jitter uncertainty, a drift uncertainty, and a missed synchronization component that is determined based on a number of missed periodic beacons from the second node.

9. The method of claim 8, wherein determining the second listening window further comprises:

calculating a start time for the second listening window by subtracting the time uncertainty from the first alternate transmission time; and

calculating an end time for the second listening window by adding the first alternate transmission time, an interval over which a synchronization header for the second periodic beacon is to be received, and the time uncertainty.

10. The method of claim 1, wherein the network comprises a mesh network.

11. One or more non-transitory computer readable media storing instructions that, when executed by one or more processors, cause the one or more processors of a first node in a network to perform the steps of:

detecting a first scheduling conflict between a first transmission time associated with a first periodic beacon from the first node and a first listening window associated with receiving a second periodic beacon from a second node in the network;

determining a first alternate transmission time for the second node to transmit the second periodic beacon based on a second transmission time of the second periodic beacon by the second node and a position of the second node in the network;

calculating a second listening window to receive the second periodic beacon from the second node at the first alternate transmission time; and

listening for the second periodic beacon during the second listening window.

12. The one or more non-transitory computer readable media of claim 11, wherein the instructions further cause the one or more processors to perform the steps of:

detecting a second scheduling conflict between a third transmission time of a third periodic beacon by the first node and a fourth transmission time of a fourth periodic beacon by the second node;

determining a second alternate transmission time for the first node to transmit the third periodic beacon based on the third transmission time;

transmitting the third periodic beacon at the third transmission time; and

transmitting an alternate beacon at the second alternate transmission time.

13. The one or more non-transitory computer readable media of claim 12, wherein detecting the second scheduling conflict comprises determining that an interval between the third transmission time and the fourth transmission time does not exceed a sum of a first time uncertainty included in a third listening window associated with receiving the third periodic beacon from the first node and a second time uncertainty included in a fourth listening window associated with receiving the fourth periodic beacon from the second node.

14. The one or more non-transitory computer readable media of claim 11, wherein detecting the first scheduling conflict comprises determining that an interval between the first transmission time and the second transmission time does not exceed a sum of a time uncertainty included in the first listening window and an overhead factor.

15. The one or more non-transitory computer readable media of claim 11, wherein determining the first alternate transmission time comprises:

calculating a time slot offset based on a hop count from the second node to a root node in the network, wherein the hop count represents the position of the second node in the network; and

adding the time slot offset to a time slot number corresponding to the second transmission time.

16. The one or more non-transitory computer readable media of claim 11, wherein the instructions further cause the one or more processors to perform the steps of:

detecting a second scheduling conflict between a third listening window for receiving a third periodic beacon from a third node and a fourth listening window for receiving a fourth periodic beacon from a fourth node;

selecting, from the third node and the fourth node, a node with an older periodic beacon receive time; and

listening for a periodic beacon from the node during a corresponding listening window.

17. The one or more non-transitory computer readable media of claim 16, wherein detecting the second scheduling conflict comprises determining that an interval between a third transmission time associated with the third periodic beacon and a fourth transmission time associated with the fourth periodic beacon does not exceed a threshold amount of time that is based on a first time uncertainty included in the third listening window, a second time uncertainty included in the fourth listening window, and an overhead factor.

18. The one or more non-transitory computer readable media of claim 11, further comprising estimating the second transmission time based on a network time included in a previous periodic beacon from the second node and a receive time of the previous periodic beacon.

19. The one or more non-transitory computer readable media of claim 11, wherein listening for the second periodic beacon comprises:

receiving a preamble and a start frame delimiter for the second periodic beacon during the second listening window; and

listening for a frame included in the second periodic beacon after the second listening window has lapsed.

20. A system, comprising:

a first node in a network, the first node comprising:

a memory that stores instructions, and

a processor that is coupled to the memory and, when executing the instructions, is configured to:

detect a first scheduling conflict between a first transmission time associated with a first periodic beacon from the first node

and a first listening window associated with receiving a second periodic beacon from a second node in the network;

determine a first alternate transmission time for the second node to transmit the second periodic beacon based on a second transmission time of the second periodic beacon by the second node and a position of the second node in the network;

calculate a second listening window to receive the second periodic beacon from the second node at the first alternate transmission time; and

listen for the second periodic beacon during the second listening window.