WHAT IS CLAIMED IS:

1. A method, comprising:

receiving, by at first node in a network at a first receive time, a first periodic beacon from a second node in the network, the first periodic beacon including a first network time associated with the second node;

determining, by the first node, a second receive time at which a second periodic beacon from the second node is to be received based on the first network time and the first receive time;

calculating, by the first node, a first listening window for the second periodic beacon based on the second receive time and a first drift uncertainty associated with an anticipated drift in a correction of a timing error between the first node and the second node; and

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

2. The method of claim 1, further comprising:

detecting, by the first node, that the second periodic beacon was not received during the first listening window; and

calculating, by the first node, a second listening window for a third periodic beacon based on a third receive time at which the third periodic beacon is to be received from the second node, a second drift uncertainty, and a missed synchronization component that accounts for a potential increase in the timing error due to missed periodic beacons from the second node.

3. The method of claim 2, further comprising determining, by the first node, the missed synchronization component based on a number of missed periodic beacons transmitted from the second node.

4. The method of claim 2, wherein calculating the second listening window comprises limiting the second listening window based on a maximum time uncertainty associated with the second drift uncertainty and the missed synchronization component.

5. The method of claim 1, further comprising:

determining, by the first node, a first transmission time at which a unicast message is to be sent to the second node based on the first network time and the first receive time; and

transmitting, by the first node, the unicast message at the first transmission time.

6. The method of claim 1, further comprising:

determining, by the first node, a first transmission time of a third periodic beacon based on a second network time and a beaconing interval; and

broadcasting, by the first node, the third periodic beacon to one or more neighboring nodes in the network at the first transmission time, wherein the one or more neighboring nodes include the second node.

7. The method of claim 1, wherein listening for the second periodic beacon comprises:

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

in response to receiving the preamble and the start frame delimiter, continuing to listen for the second periodic beacon after the first listening window has lapsed.

8. The method of claim 1, wherein determining the second receive time comprises:

computing a current time slot number at the second node based on a current time, the first receive time, a previous time slot number representing the first network time, and a time slot duration; and

computing the second receive time based on the time slot duration and a number of time slots between the current time slot number and an expected time slot number for the second periodic beacon.

9. The method of claim 8, wherein determining the second receive time further comprises computing the expected time slot number for the second periodic beacon based on a beaconing interval and the current time slot number.

10. The method of claim 1, further comprising storing, by the first node, the first network time and the first receive time in association with an identifier corresponding to the second node in a neighborhood table.

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

receiving, from a second node in the network and at a first receive time, a first periodic beacon that includes a first network time associated with the second node;

determining a second receive time at which a second periodic beacon from the second node is to be received based on the first network time and the first receive time;

calculating a first listening window for the second periodic beacon based on the second receive time and a first jitter uncertainty associated with timing jitter in the first node or the second node; and

listening for the second periodic beacon during the first 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 that the second periodic beacon was not received during the first listening window; and

calculating a second listening window for a third periodic beacon based on a third receive time at which the third periodic beacon is to be received from the second node, the first jitter uncertainty, and a missed synchronization component that accounts for a potential increase in timing error due to missed periodic beacons from the second node.

13. The one or more non-transitory computer readable media of claim 12, wherein calculating the second listening window comprises limiting the second listening window based on a maximum time uncertainty associated with the first jitter uncertainty and the missed synchronization component.

14. The one or more non-transitory computer readable media of claim 13, wherein the instructions further cause the one or more processors to perform the step of increasing a third listening window for a fourth periodic beacon from the second node beyond the maximum time uncertainty after a timeout period has lapsed since the third receive time.

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

computing a current time slot number at the second node based on a current time, the first receive time, a previous time slot number representing the first network time, and a time slot duration; and

computing the second receive time based on the time slot duration and a number of time slots between the current time slot number and an expected time slot number for the second periodic beacon.

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

determining a time uncertainty for the second periodic beacon based on a sum of the first jitter uncertainty and a first drift uncertainty associated with an

anticipated drift in a correction of a timing error between the first node and the second node;

calculating a start time for the first listening window that precedes the second receive time by the time uncertainty; and

calculating an end time for the first listening window based on a sum of the second receive time, an interval over which a synchronization header for the second periodic beacon is to be received, and the time uncertainty.

17. 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 first listening window; and

in response to receiving the preamble and the start frame delimiter, continuing to listen for the second periodic beacon after the first listening window has lapsed.

18. 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 step of storing the first network time and the first receive time in association with an identifier for the second node in a neighborhood table.

19. The one or more non-transitory computer readable media of claim 11, wherein the network comprises a mesh network and the first node and the second node are neighbors in the mesh network.

20. A node in a network, comprising:

a memory that stores instructions, and

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

receive, from a second node in the network and at a first receive time, a first periodic beacon that includes a network time associated with the second node;

determine a second receive time at which a second periodic beacon from the second node is to be received based on the network time and the first receive time;

calculate a listening window for the second periodic beacon based on the second receive time, a jitter uncertainty associated with timing jitter in the node or the second node, and a drift uncertainty associated with an anticipated drift to correct a timing error between the node and the second node; and

listen for the second periodic beacon during the listening window.