WHAT IS CLAIMED IS:

1. A computer-implemented method for pairing with a potential parent node within a wireless mesh network, the method comprising:

determining that a discovery process should be executed during a first time slot;

transmitting a first set of packets to a potential parent node during the first time slot;

receiving one or more additional packets from the potential parent node after the first set of packets has been transmitted;

generating a first metric corresponding to the potential parent node based on the one or more additional packets; and

performing a pairing process with the potential parent node based on the first metric.

2. The computer-implemented method of claim 1, wherein generating the first metric comprises at least one of generating an average received signal strength indication associated with the one or more additional packets and determining a hop count associated with the potential parent node.

3. The computer-implemented method of claim 1, further comprising evaluating the first metric to determine that the first metric exceeds a second metric corresponding to a second node.

4. The computer-implemented method of claim 1, wherein, subsequent to the pairing process, the potential parent node transmits a beacon indicating to at least one other node within the wireless mesh network that the potential parent node is unavailable for additional pairing.

5. The computer-implemented method of claim 1, wherein determining that the discovery process should be executed during the first time slot comprises evaluating a function based on the first time slot number.

6. The computer-implemented method of claim 1, further comprising determining a reduced set of channels across which the discovery process should be executed

based on the first time slot number and a plurality of available channels, wherein the reduced set of channels includes fewer channels than the plurality of available channels.

7. The computer-implemented method of claim 6, wherein the first set of packets is transmitted during the first time slot across the reduced set of channels, and further comprising:

receiving a first packet from the potential parent node, wherein the potential parent node transmits the first packet in response to at least one packet included in the first set of packets; and

identifying the potential parent node based on the first packet.

8. The computer-implemented method of claim 7, wherein the first set of packets is transmitted across the reduced set of channels using a channel hopping sequence associated with the reduced set of channels.

9. The computer-implemented method of claim 7, wherein identifying the potential parent node comprises:

obtaining identifying information associated with the potential parent node from the first packet; and

updating a neighbor table to include the identifying information, wherein one or more subsequent communications with the potential parent node are based on the identifying information.

10. The computer-implemented method of claim 6, further comprising:

determining that the discovery process should be initially executed or re-executed during a second time slot;

determining a different reduced set of channels corresponding to the second time slot based on a time slot number assigned to the second time slot and the plurality of available channels.

11. A non-transitory computer-readable medium storing program instructions that, when executed by a processor, cause the processor to perform a pairing process with a potential parent node within a wireless mesh network by performing the steps of:

determining that a discovery process should be executed during a first time slot;

transmitting a first set of packets to a potential parent node during the first time slot;

receiving one or more additional packets from the potential parent node after the first set of packets has been transmitted;

generating a first metric corresponding to the potential parent node based on the one or more additional packets; and

performing a pairing process with the potential parent node based on the first metric.

12. The non-transitory computer-readable medium of claim 11, wherein the step of generating the first metric comprises at least one of generating an average received signal strength indication associated with the one or more additional packets and determining a hop count associated with the potential parent node.

13. The non-transitory computer-readable medium of claim 11, further comprising the step of evaluating the first metric to determine that the first metric exceeds a second metric corresponding to a second node.

14. The non-transitory computer-readable medium of claim 11, wherein, subsequent to the pairing process, the potential parent node transmits a beacon indicating to at least one other node within the wireless mesh network that the potential parent node is unavailable for additional pairing.

15. The non-transitory computer-readable medium of claim 11, wherein the step of determining that the discovery process should be executed during the first time slot comprises evaluating a function based on the first time slot number, and further comprising the step of determining a reduced set of channels across which the discovery process should be executed based on the first time slot number and a plurality of available channels, wherein the reduced set of channels includes fewer channels than the plurality of available channels.

16. A system, comprising:

a discovering node that resides within a wireless mesh network and performs the steps of:

determining that a discovery process should be executed during a first time slot;

transmitting a first set of packets to a potential parent node during the first time slot;

receiving one or more additional packets from the potential parent node after the first set of packets has been transmitted;

generating a first metric corresponding to the potential parent node based on the one or more additional packets; and

performing a pairing process with the potential parent node based on the first metric.

the potential parent node that also resides within the wireless mesh network and performs the steps of:

transmitting the one or more additional data packets to the discovering node; and

performing the pairing process with the discovering node.

17. The system of claim 16, wherein the discovering node performs the additional step of determining a reduced set of channels across which the discovery process should be executed based on the first time slot number and a plurality of available channels, wherein the reduced set of channels includes fewer channels than the plurality of available channels.

18. The system of claim 17, wherein the potential parent node independently performs the step of determining the reduced set of channels across which the discovery process should be executed based on a second time slot number and the plurality of available channels, wherein first time slot number and the second time slot number have the same value.

19. The system of claim 16, wherein the discovering node transmits the first set of packets during the first time slot across the reduced set of channels, and further comprising:

receiving a first packet from the potential parent node; and

identifying the potential parent node based on the first packet.

20. The system of claim 19, wherein the potential parent node performs the additional steps of transmitting the first packet to the discovering node in response to at least one packet included in the first set of packets, wherein the first packet includes identifying information associated with the potential parent node.

WHAT IS CLAIMED IS:

1. A computer-implemented method for pairing with a potential parent node within a wireless mesh network, the method comprising:

determining that a first time slot is designated as a discovery window for executing a discovery process, wherein a start time of the discovery window is determined based on a predetermined function that automatically changes the start time of the discovery window for each sequential day included in a plurality of days;

transmitting a first set of packets to a potential parent node during the first time slot;

receiving one or more additional packets from the potential parent node after the first set of packets has been transmitted;

generating a first metric corresponding to the potential parent node based on the one or more additional packets; and

performing a pairing process with the potential parent node based on the first metric.

2. The computer-implemented method of claim 1, wherein generating the first metric comprises at least one of generating an average received signal strength indication associated with the one or more additional packets and determining a hop count associated with the potential parent node.

3. The computer-implemented method of claim 1, further comprising evaluating the first metric to determine that the first metric exceeds a second metric corresponding to a second node.

4. The computer-implemented method of claim 1, wherein, subsequent to the pairing process, the potential parent node transmits a beacon indicating to at least one other node within the wireless mesh network that the potential parent node is unavailable for additional pairing.

5. The computer-implemented method of claim 1, wherein determining that the first time slot is designated as the discovery window comprises evaluating another function based on a first time slot number.

6. The computer-implemented method of claim 1, further comprising determining a reduced set of channels across which the discovery process is executed based on a first time slot number and a plurality of available channels, wherein the reduced set of channels includes fewer channels than the plurality of available channels.

7. The computer-implemented method of claim 6, wherein the first set of packets is transmitted during the first time slot across the reduced set of channels, and further comprising:

receiving a first packet from the potential parent node, wherein the potential parent node transmits the first packet in response to at least one packet included in the first set of packets; and

identifying the potential parent node based on the first packet.

8. The computer-implemented method of claim 7, wherein the first set of packets is transmitted across the reduced set of channels using a channel hopping sequence associated with the reduced set of channels.

9. The computer-implemented method of claim 7, wherein identifying the potential parent node comprises:

obtaining identifying information associated with the potential parent node from the first packet; and

updating a neighbor table to include the identifying information, wherein one or more subsequent communications with the potential parent node are based on the identifying information.

10. The computer-implemented method of claim 6, further comprising:

determining that the discovery process should be initially executed or re-executed during a second time slot;

determining a different reduced set of channels corresponding to the second time slot based on a time slot number assigned to the second time slot and the plurality of available channels.

11. One or more non-transitory computer-readable media storing program instructions that, when executed by one or more processors, cause the one or more processors to perform a pairing process with a potential parent node within a wireless mesh network by performing the steps of:

determining that a first time slot is designated as a discovery window for executing a discovery process, wherein a start time of the discovery window is determined based on a predetermined function that automatically changes the start time of the discovery window for each sequential day included in a plurality of days;

transmitting a first set of packets to a potential parent node during the first time slot;

receiving one or more additional packets from the potential parent node after the first set of packets has been transmitted;

generating a first metric corresponding to the potential parent node based on the one or more additional packets; and

performing a pairing process with the potential parent node based on the first metric.

12. The one or more non-transitory computer-readable media of claim 11, wherein the step of generating the first metric comprises at least one of generating an average received signal strength indication associated with the one or more additional packets and determining a hop count associated with the potential parent node.

13. The one or more non-transitory computer-readable media of claim 11, further comprising the step of evaluating the first metric to determine that the first metric exceeds a second metric corresponding to a second node.

14. The one or more non-transitory computer-readable media of claim 11, wherein, subsequent to the pairing process, the potential parent node transmits a beacon indicating to at least one other node within the wireless mesh network that the potential parent node is unavailable for additional pairing.

15. The one or more non-transitory computer-readable media of claim 11, wherein the step of determining that the first time slot is designated as the discovery window comprises evaluating another function based on a first time slot number, and further comprising the step of determining a reduced set of channels across which the discovery process is executed based on the first time slot number and a plurality of available channels, wherein the reduced set of channels includes fewer channels than the plurality of available channels.

16. A system, comprising:

a discovering node that resides within a wireless mesh network and performs the steps of:

determining that a first time slot is designated as a discovery window for executing a discovery process, wherein a start time of the discovery window is determined based on a predetermined function that automatically changes the start time of the discovery window for each sequential day included in a plurality of days,

transmitting a first set of packets to a potential parent node during the first time slot,

receiving one or more additional packets from the potential parent node after the first set of packets has been transmitted,

generating a first metric corresponding to the potential parent node based on the one or more additional packets, and

performing a pairing process with the potential parent node based on the first metric;

the potential parent node that also resides within the wireless mesh network and performs the steps of:

transmitting the one or more additional data packets to the discovering node, and

performing the pairing process with the discovering node.

17. The system of claim 16, wherein the discovering node performs the additional step of determining a reduced set of channels across which the discovery process is executed based on a first time slot number and a plurality of available channels, wherein the reduced set of channels includes fewer channels than the plurality of available channels.

18. The system of claim 17, wherein the potential parent node independently performs the step of determining the reduced set of channels across which the discovery process is executed based on a second time slot number and the plurality of available channels, wherein the first time slot number and the second time slot number have the same value.

19. The system of claim 16, wherein the discovering node transmits the first set of packets during the first time slot across the reduced set of channels, and further comprising:

receiving a first packet from the potential parent node; and

identifying the potential parent node based on the first packet.

20. The system of claim 19, wherein the potential parent node performs the additional steps of transmitting the first packet to the discovering node in response to at least one packet included in the first set of packets, wherein the first packet includes identifying information associated with the potential parent node.