WHAT IS CLAIMED IS:

1. A method comprising:

receiving, by a first node device within a mesh network, an information element that specifies one or more communication modes supported by a second node device within the mesh network;

in response to determining that a first metric value associated with a first communication mode in the one or more communication modes is lower than a second metric value associated with a default communication mode by a threshold value, selecting, by the first node device, the first communication mode from the one or more communication modes; and

configuring, by the first node device, a communication link between the first node device and the second node device according to the first communication mode.

2. The method of claim 1, wherein the information element is received from the second node device while the first node device and the second node device are communicating via the default communication mode.

3. The method of claim 1, wherein the first metric value is determined based on a data success rate for the first communication mode.

4. The method of claim 3, further comprising updating, by the first node device, the data success rate based on communication between the first node device and the second node device over the communication link using the first communication mode.

5. The method of claim 3, further comprising filtering, by the first node device, the data success rate using an infinite impulse response filter.

6. The method of claim 1, wherein the first metric value is determined based on at least one of a data rate associated with the first communication mode or a backoff time associated with the first communication mode.

7. The method of claim 1, wherein the threshold value is at least 10 percent of the second metric value.

8. The method of claim 1, further comprising transmitting, by the first node device to the second node device before configuring the communication link according to the first communication mode, a mode selection message that specifies the first communication mode.

9. The method of claim 1, wherein the information element is included in a data message, an acknowledgement message, or a discovery frame received from the second node device.

10. One or more non-transitory computer-readable media storing program instructions that, when executed by a node device in a mesh network, cause the node device to perform operations comprising:

receiving, from a second node device in the mesh network, a message that identifies a set of modes supported by the second node device;

computing a first cost metric associated with a first mode of the set of modes;

computing a second cost metric associated with a current mode being used to exchange messages between the node device and the second node device using a wireless link; and

in response to determining that the first cost metric is lower than the second cost metric by more than a threshold amount, configuring the wireless link for communication using the first mode.

11. The one or more non-transitory computer-readable media of claim 10, wherein computing the first cost metric comprises computing the first cost metric based on a success rate for transmissions using the first mode.

12. The one or more non-transitory computer-readable media of claim 10, wherein computing the first cost metric comprises computing the first cost metric based on at

least one of a data rate associated with the first mode or a backoff time associated with the first mode.

13. The one or more non-transitory computer-readable media of claim 10, wherein the operations further comprise transmitting, to the second node device before configuring the wireless link for communication using the first mode, a mode transmission message that identifies the first mode.

14. The one or more non-transitory computer-readable media of claim 10, wherein the first mode is a mode from the set of modes having a lowest cost metric.

15. The one or more non-transitory computer-readable media of claim 10, further comprising:

computing a third cost metric associated with a second mode from the set of modes;

delaying for a predetermined period of time after configuring the wireless link for communication using the first mode before computing an updated first cost metric for the first mode; and

in response to determining that the third cost metric is lower than the updated first cost metric by at least the threshold amount, configuring the wireless link for communication using the second mode.

16. A network device comprising:

one or more processors; and

a memory storing instructions that when executed by the one or more processors causes the network device to perform operations comprising:

receiving, from a second network device in a mesh network, a first message;

extracting an information element from the first message that identifies a set of communication modes supported by the second network device;

determining a common set of communication modes based on the set of communication modes supported by the second network device and a set of communication modes supported by the network device;

in response to determining that a first metric value calculated for a first communication mode in the set of common communication modes is lower than a second metric calculated for a default communication mode by a threshold value, selecting the first communication mode from the set of common communication modes; and

configuring a communication link between the network device and the second network device according to the first communication mode.

17. The network device of claim 16, wherein the first message is received from the second network device over the communication link while the communication link is configured according to the default communication mode.

18. The network device of claim 16, wherein the first metric value is calculated based on an estimate of a data transmission success rate for communication between the network device and the second network device using the communication link while the communication link is configured according to the first communication mode.

19. The network device of claim 16, wherein the first metric value is calculated based on one or more parameters selected based on at least one of a data rate associated with the first communication mode or a backoff time associated with the first communication mode.

20. The network device of claim 16, wherein the operations further comprise, prior to configuring the communication link according to the first communication mode, transmitting a second message to the second network device to indicate that further communication using the communication link is in the first communication mode.