WHAT IS CLAIMED IS:

1. A computer-implemented method for transmitting data between node devices in a mesh network, the method comprising:

receiving, by a first node device within the mesh network that supports a first set of communication modes, a first information element that specifies a second set of communication modes supported by a second node device within the mesh network;

determining, based on the first information element, a common set of communication modes that includes at least a default mode and a first mode, wherein each communication mode included in the common set of communication modes is supported by both the first node device and the second node device;

selecting, from the common set of communication modes, the first mode as a first preferred communication mode for data transmissions between the first node device and the second node device; and

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

2. The computer-implemented method of claim 1, further comprising transmitting a first data packet from the first node device to the second node device via the communication link.

3. The computer-implemented method of claim 2, further comprising:

generating a selection message that specifies the first mode; and

transmitting the selection message to the second node device.

4. The computer-implemented method of claim 3, wherein the selection message includes a first mode shift information element that includes at least:

a first entry specifying the default mode; and

a second entry specifying the first mode.

5. The computer-implemented method of claim 4, wherein the first mode configures the communication link after transmitting the selection message.

6. The computer-implemented method of claim 3, wherein the selection message includes a first mode shift information element that includes at least:

a first entry specifying the default mode;

a second entry specifying the first mode; and

a third entry specifying a second mode as a second preferred mode.

7. The computer-implemented method of claim 6, wherein:

the first node device configures the communication link after transmitting the selection message; and

the first node device, after transmitting the first data packet, reconfigures the communication link according to the second mode.

8. The computer-implemented method of claim 1, wherein the first information element includes:

a first entry specifying a first set of operating parameters that includes a first data rate associated with the default mode; and

a second entry specifying a second set of operating parameters that includes a second data rate associated with the first mode, wherein the second data rate is higher than the first data rate.

9. The computer-implemented method of claim 8, wherein each of the first set of operating parameters and each of the second set of operating parameters further include at least one of: a modulation scheme, a channel spacing group, or a set of supported frequencies.

10. The computer-implemented method of claim 8, wherein selecting the first mode as the first preferred communication mode comprises:

comparing at least a first operating parameter included in the first set of operating parameters to at least a second operating parameter included in the second set of operating parameters;

determining that the second operating parameter is greater than the first operating parameter; and

in response to determining that the second operating parameter is greater than the first operating parameter, selecting the first mode as the first preferred communication mode.

11. The computer-implemented method of claim 1, wherein the first information element is received from the second node device in an encrypted message, and further comprising decrypting the encrypted message to access the first information element.

12. One or more non-transitory computer-readable storage media storing instructions that, when executed by one or more processors, cause the one or more processors to transmit data between node devices in a mesh network by performing the steps of:

receiving, by a first node device within the mesh network that supports a first set of communication modes, a first information element that specifies a second set of communication modes supported by a second node device within the mesh network;

determining, based on the first information element, a common set of communication modes that includes at least a default mode and a first mode, wherein each communication mode included in the common set of communication modes is supported by both the first node device and the second node device;

selecting, from the common set of communication modes, the first mode as a first preferred communication mode for data transmissions between the first node device and the second node device; and

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

13. The one or more non-transitory computer-readable storage media of claim 12, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the step of transmitting a first data packet from the first node device to the second node device via the communication link.

14. The one or more non-transitory computer-readable storage media of claim 13, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

transmitting a transition message that specifies a switch from the first mode to the default mode; and

upon transmitting the transition message, reconfiguring the communication link according to the default mode.

15. The one or more non-transitory computer-readable storage media of claim 13, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

after transmitting the first data packet, reconfiguring the communication link according to a second mode, wherein the first mode has at least one operating parameter that is higher than the default mode and lower than the first mode; and

transmitting a second data packet from the first node device to the second node device via the communication link.

16. The one or more non transitory computer-readable storage media of claim 13, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

after transmitting the first data packet, reconfiguring the communication link according to the default mode.

17. The one or more non-transitory computer-readable storage media of claim 12, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

generating a selection message that specifies the first mode; and

transmitting the selection message to the second node device.

18. A system, comprising:

a first node device that resides within a mesh network and supports a first set of communication modes;

a second node device that resides within the mesh network and supports a second set of communication modes; and

a communication link between the first node device and the second node device,

wherein the first node device performs the steps of:

receiving a first information element that specifies the second set of communication modes supported by a second node device within the mesh network,

determining, based on the first information element, a common set of communication modes that includes at least a default mode and a first mode, wherein each communication mode included in the common set of communication modes is supported by both the first node device and the second node device,

selecting, from the common set of communication modes, the first mode as a first preferred communication mode for data transmissions between the first node device and the second node device, and

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

19. The system of claim 18, wherein the first node device includes:

a memory that stores:

a mode change application,

a first set of operating parameters associated with the default mode, and

a second set of operating parameters associated with the first mode; and

a processor that executes the mode change application to select the first mode as the first preferred communication mode by performing the steps of:

comparing at least a first operating parameter included in the first set of operating parameters to at least a second operating parameter included in the second set of operating parameters;

determining that the second operating parameter is greater than the first operating parameter; and

in response to determining that the second operating parameter is greater than the first operating parameter, selecting the first mode as the first preferred communication mode.

20. The system of claim 18, wherein the first node device further performs the steps of:

generating a selection message that specifies the first mode; and

transmitting the selection message to the second node device.

1. A method comprising:

receiving, by a first node device within a mesh network that supports a first set of communication modes, a first information element that specifies a second set of communication modes supported by a second node device within the mesh network;

determining, based on the first information element, a common set of communication modes that includes at least a default mode and a first mode, wherein each communication mode included in the common set of communication modes is supported by both the first node device and the second node device;

selecting, from the common set of communication modes, the first mode as a first preferred communication mode for data transmissions between the first node device and the second node device; and

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

2. The method of claim 1, further comprising transmitting a first data packet from the first node device to the second node device via the communication link.

3. The method of claim 2, further comprising:

generating a selection message that specifies the first mode; and

transmitting the selection message to the second node device.

4. The method of claim 3, wherein the selection message includes a first mode shift information element that includes at least:

a first entry specifying the default mode; and

a second entry specifying the first mode.

5. The method of claim 4, wherein the first node device configures the communication link after transmitting the selection message.

6. The method of claim 3, wherein the selection message includes a first mode shift information element that includes at least:

a first entry specifying the default mode;

a second entry specifying the first mode; and

a third entry specifying a second mode as a second preferred mode.

7. The method of claim 6, wherein:

the first node device configures the communication link after transmitting the selection message; and

the first node device, after transmitting the first data packet, reconfigures the communication link according to the second mode.

8. The method of claim 1, wherein the first information element includes:

a first entry specifying a first set of operating parameters that includes a first data rate associated with the default mode; and

a second entry specifying a second set of operating parameters that includes a second data rate associated with the first mode, wherein the second data rate is higher than the first data rate.

9. The method of claim 8, wherein each of the first set of operating parameters and each of the second set of operating parameters further include at least one of: a modulation scheme, a channel spacing group, or a set of supported frequencies.

10. The method of claim 8, wherein selecting the first mode as the first preferred communication mode comprises:

comparing at least a first operating parameter included in the first set of operating parameters to at least a second operating parameter included in the second set of operating parameters;

determining that the second operating parameter is greater than the first operating parameter; and

in response to determining that the second operating parameter is greater than the first operating parameter, selecting the first mode as the first preferred communication mode.

11. The method of claim 1, wherein the first information element is received from the second node device in an encrypted message, and further comprising decrypting the encrypted message to access the first information element.

12. One or more non-transitory computer-readable storage media storing instructions that, when executed by one or more processors, cause the one or more processors to perform the steps of:

receiving, by a first node device within a mesh network that supports a first set of communication modes, a first information element that specifies a second set of communication modes supported by a second node device within the mesh network;

determining, based on the first information element, a common set of communication modes that includes at least a default mode and a first mode, wherein each communication mode included in the common set of communication modes is supported by both the first node device and the second node device;

selecting, from the common set of communication modes, the first mode as a first preferred communication mode for data transmissions between the first node device and the second node device; and

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

13. The one or more non-transitory computer-readable storage media of claim 12, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the step of transmitting a first data packet from the first node device to the second node device via the communication link.

14. The one or more non-transitory computer-readable storage media of claim 13, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

transmitting a transition message that specifies a switch from the first mode to the default mode; and

upon transmitting the transition message, reconfiguring the communication link according to the default mode.

15. The one or more non-transitory computer-readable storage media of claim 13, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

after transmitting the first data packet, reconfiguring the communication link according to a second mode, wherein the first mode has at least one operating parameter that is higher than the default mode and lower than the first mode; and

transmitting a second data packet from the first node device to the second node device via the communication link.

16. The one or more non-transitory computer-readable storage media of claim 13, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

after transmitting the first data packet, reconfiguring the communication link according to the default mode.

17. The one or more non-transitory computer-readable storage media of claim 12, further storing instructions that, when executed by the one or more processors, cause the one or more processors to further perform the steps of:

generating a selection message that specifies the first mode; and

transmitting the selection message to the second node device.

18. A system, comprising:

a first node device that resides within a mesh network and supports a first set of communication modes;

a second node device that resides within the mesh network and supports a second set of communication modes; and

a communication link between the first node device and the second node device,

wherein the first node device performs the steps of:

receiving a first information element that specifies the second set of communication modes supported by the second node device within the mesh network,

determining, based on the first information element, a common set of communication modes that includes at least a default mode and a first mode, wherein each communication mode included in the common set of communication modes is supported by both the first node device and the second node device,

selecting, from the common set of communication modes, the first mode as a first preferred communication mode for data transmissions between the first node device and the second node device, and

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

19. The system of claim 18, wherein the first node device includes:

a memory that stores:

a mode change application,

a first set of operating parameters associated with the default mode, and

a second set of operating parameters associated with the first mode; and

a processor that executes the mode change application to select the first mode as the first preferred communication mode by performing the steps of:

comparing at least a first operating parameter included in the first set of operating parameters to at least a second operating parameter included in the second set of operating parameters;

determining that the second operating parameter is greater than the first operating parameter; and

in response to determining that the second operating parameter is greater than the first operating parameter, selecting the first mode as the first preferred communication mode.

20. The system of claim 18, wherein the first node device further performs the steps of:

generating a selection message that specifies the first mode; and

transmitting the selection message to the second node device.