

CLAIMS

WHAT IS CLAIMED IS:

1. A method implemented in a multi-channel network having a control channel and a plurality of data channels, comprising:

5 under control of a node configured with computer-executable instructions: transmitting or receiving a message on the control channel after a determination has been made that a number of bits or bytes of data for a broadcast is greater than a number of bits or bytes of the message, the message indicating: (i) the data will be broadcast on a particular data channel of the plurality of data channels, and (ii) a modulation
10 technique of the broadcast;

 switching to the particular data channel based at least in part on the transmitted or received message; broadcasting or listening for a broadcast of the data on the particular data channel based at least in part on the modulation technique; and switching to the control channel after the data has been broadcast or a predetermined time period has
15 expired.

2. The method of claim 1, further comprising: determining the particular data channel, the modulation technique, and a data rate for broadcasting the data; and

 determining that the number of bits or bytes of the data is greater than the number
20 of bits or bytes of the message, wherein the message indicates that the data will be broadcast on the determined particular data channel with the determined modulation technique and at the determined data rate.

3. The method of claim 2, wherein the determining the particular data channel
25 includes determining the modulation technique based at least in part on capabilities of other nodes located within a predetermined proximity to the node.

4. The method of claim 2, wherein the determined modulation technique comprises a modulation technique that provides a longest communication range from among a

plurality of modulation techniques that are available to other nodes located within a predetermined proximity to the node.

5. The method of claim 1, further comprising:

5 receiving, at a media access control sub-layer of the node and from another layer of the node, a command requesting to broadcast the data with the modulation technique, and wherein the modulation technique indicated in the message comprises the modulation technique identified in the command.

10 6. The method of claim 1, wherein:

transmitting or receiving the message includes transmitting the message on the control channel, and broadcasting or listening for a broadcast of the data includes broadcasting the data on the particular data channel.

15 7. The method of claim 1, wherein:

transmitting or receiving the message includes receiving the message on the control channel, broadcasting or listening for a broadcast of the data includes listening for the broadcast of the data on the particular data channel.

20 8. The method of claim 1, further comprising:

determining that the data has not been previously received, wherein the switching to the particular data channel includes switching to the particular data channel in response to determining that the data has not been previously received.

25 9. The method of claim 1, further comprising:

receiving the data on the particular data channel after switching to the particular data channel, wherein the switching to the control channel includes switching to the control channel after receiving the data on the particular data channel.

30 10. A network computing device of a multi-channel network having a control channel and a plurality of data channels, comprising:

one or more processors;
memory communicatively coupled to the one or more processors; and
one or more modules stored in the memory and executable on the one or more processors to perform acts including:

- 5 determining (i) a particular data channel from the plurality of data channels for broadcasting data, and (ii) a modulation technique for broadcasting the data;
 determining that a number of bits or bytes of the data is greater than a number of bits or bytes of a message, the message indicating that the data will be broadcast on the particular data channel according to the modulation technique;
10 transmitting the message over the control channel upon determining that the number of bits or bytes of the data is greater than the number of bits or bytes of the message;
 switching to the particular data channel;
 broadcasting the data over the particular data channel based at least in part
15 on the modulation technique; and
 switching to the control channel after the data has been broadcast.

11. The network computing device of claim 10, wherein the acts further include:

- 20 retransmitting the message over the control channel a predetermined number of times that is specified by an upper layer above a media access control sub-layer of the network computing device; and rebroadcasting the data over the particular data channel after each retransmission of the message.

25 12. The network computing device of claim 10, wherein:

 the transmitting the message includes transmitting the message over the control channel which is located on a first channel of the network, and

 the acts further include:

- redefining the control channel from the first channel to a second channel of
30 the network; and

retransmitting the message over the control channel when the control channel is redefined to the second channel.

13. The network computing device of claim 12, wherein the acts further
5 include:

rebroadcasting the data over a data channel of the plurality of data channels after the control channel has been redefined to the second channel and the message has been retransmitted.

10 14. A method implemented in a multi-channel network having a control channel and a plurality of data channels, comprising:

under control of a node configured with computer-executable instructions:

receiving a message on the control channel after a determination has been made that a number of bits or bytes of data for a broadcast is greater than a number of bits or
15 bytes of the message, the message indicating: (i) the data will be broadcast on a particular data channel of the plurality of data channels, and (ii) a modulation technique of the broadcast;

after the message has been received, switching to the particular data channel;

listening for a broadcast of the data on the particular data channel based at least in
20 part on the modulation technique;

receiving the data on the particular data channel; and switching to the control channel after the data has been received or a predetermined time period has expired.

15. The network computing device of claim 10, wherein the data is broadcast
25 over the particular data channel without having received a communication from a neighboring node that indicates an availability of the neighboring node to receive the data.

16. One or more non-transitory computer-readable media storing computer-
30 executable instructions that, when executed by one or more processors, cause the one or more processors to perform the method of claim 1.

17. The method of claim 1, wherein the broadcasting or listening for a broadcast of the data includes broadcasting or listening for a broadcast of the data after a predetermined time interval has expired since the message was transmitted or received on the control channel, the predetermined time interval comprising a short inter-frame
5 space.

18. The method of claim 1, wherein the data is associated with consumption of at least one of electricity, water, or gas.

10 19. The method of claim 1, wherein broadcasting or listening for a broadcast of the data includes broadcasting the data on the particular data channel, the data being broadcast over the particular data channel without having received a communication from a neighboring node that indicates an availability of the neighboring node to receive the data.

15

20. One or more non-transitory computer-readable media storing computer-executable instructions that, when executed by one or more processors, cause the one or more processors to perform the method of claim 14.

CLAIMS

WHAT IS CLAIMED IS:

1. A method implemented in a multi-channel network having a control channel and a plurality of data channels, comprising:

5 under control of a node configured with computer-executable instructions:

transmitting or receiving, by the node, a message on the control channel indicating: (i) data will be broadcast on a particular data channel of the plurality of data channels, and (ii) a modulation technique of the broadcast;

switching, at the node, to the particular data channel based at least in part on the
10 transmitted or received message;

broadcasting or listening for a broadcast of the data on the particular data channel based at least in part on the modulation technique; and

switching, at the node, to the control channel after the data has been broadcast or a predetermined time period has expired.

15

2. The method of claim 1, further comprising:

determining the particular data channel, the modulation technique, and a data rate for broadcasting the data; and

confirming that a number of bits or bytes of the data is greater than a number of
20 bits or bytes of the message,

wherein the message indicates that the data will be broadcast on the determined particular data channel with the determined modulation technique and at the determined data rate if the number of bits or bytes of the data is greater than a number of bits or bytes of the message.

3. The method of claim 2, wherein the determining includes determining the modulation technique based at least in part on capabilities of other nodes located within a predetermined proximity to the node.

5 4. The method of claim 2, wherein the determined modulation technique comprises a modulation technique that provides a longest communication range from among a plurality of modulation techniques that are available to other nodes located within a predetermined proximity to the node.

10 5. The method of claim 1, further comprising:

receiving, at a media access control sub-layer of the node and from another layer of the node, a command requesting to broadcast the data with the modulation technique, and

15 wherein the modulation technique indicated in the message comprises the modulation technique identified in the command.

20 6. The method of claim 1, wherein the broadcasting or listening for a broadcast of the data includes broadcasting or listening for a broadcast of the data after a predetermined time interval has expired since the message was transmitted or received on the control channel, the predetermined time interval comprising a short inter-frame space.

7. The method of claim 1, wherein:

transmitting or receiving the message includes transmitting the message on the control channel, and

broadcasting or listening for a broadcast of the data includes broadcasting the data on the particular data channel.

8. The method of claim 1, wherein:

5 transmitting or receiving the message includes receiving the message on the control channel,

broadcasting or listening for a broadcast of the data includes listening for the broadcast of the data on the particular data channel.

10 9. The method of claim 1, further comprising:

determining that the data has not been previously received,

wherein the switching to the particular data channel includes switching to the particular data channel in response to determining that the data has not been previously received.

15

10. The method of claim 1, further comprising:

receiving the data on the particular data channel after switching to the particular data channel,

20 wherein the switching to the control channel includes switching to the control channel after receiving the data on the particular data channel.

11. One or more computer-readable media storing the computer-executable instructions that, when executed by one or more processors of the node, configure the node to perform the method of any of the preceding claims.

12. A network computing device of a multi-channel network having a control channel and a plurality of data channels, comprising:

one or more processors;

memory communicatively coupled to the one or more processors; and

5 one or more modules stored in the memory and executable on the one or more processors to perform acts including:

determining (i) a particular data channel from the plurality of data channels for broadcasting data, and (ii) a modulation technique for broadcasting the data;

10 transmitting a message over the control channel indicating that the data will be broadcast on the particular data channel according to the modulation technique, the data comprising a number of bits or bytes that is greater than a number of bits or bytes of the message;

switching to the particular data channel;

15 broadcasting the data over the particular data channel based at least in part on the modulation technique; and

switching to the control channel after the data has been broadcast.

13. The network computing device of claim 12, wherein the acts further include:

20 retransmitting the message over the control channel a predetermined number of times that is specified by an upper layer above a media access control sub-layer of the network computing device; and

rebroadcasting the data over the particular data channel after each retransmission of the message.

14. The network computing device of claim 12, wherein:
the transmitting the message includes transmitting the message over the control
channel which is located on a first channel of the network, and
the acts further include;

5 redefining the control channel from the first channel to a second channel of
the network; and
 retransmitting the message over the control channel when the control
channel is redefined to the second channel.

10 15. The network computing device of claim 14, wherein the acts further include:
 rebroadcasting the data over a data channel of the plurality of data channels after
the control channel has been redefined to the second channel and the message has been
retransmitted.