CLAIMS

WHAT IS CLAIMED IS:

1. One or more devices comprising:

one or more processors; and

memory storing executable instructions that, when executed by the one or more processors, cause the one or more processors to perform acts including:

receiving a first communication packet from a first utility node and a second communication packet from a second utility node, each of the first and second communication packets comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data, the first utility node and the second utility node being part of a mesh network;

extracting the payload data from the first communication packet and the payload data from the second communication packet;

determining that the extracted payload data of the first communication packet and the extracted payload data of the second communication packet each include consumption data, the consumption data including at least one of electricity consumption data, water consumption data, or natural gas consumption data;

concatenating the extracted payload data of the first communication packet and the extracted payload data of the second communication packet based at least in part on the determining;

determining that a data rate supported by the one or more devices and a third utility node of the mesh network to which the concatenated payload data is to be transmitted is less than a predetermined data rate;

segmenting the concatenated payload data into segmented payload data based at least in part on determining that the data rate supported by the one or more devices and the third utility node is less than the predetermined data rate; and

transmitting the segmented payload data in a communication packet to the third utility node, wherein the transmitting includes transmitting segments of the segmented payload data individually.

2. The one or more devices of claim 1, wherein the one or more devices comprise one or more control devices, one or more sensors, one or more transformers, one or more

routers, one or more servers, one or more relays, one or more switches, and/or one or more valves.

3. The one or more devices of claim 1, wherein the one or more devices are associated with one or more utility meters.

4. The one or more devices of claim 1, wherein the acts further include storing, in the memory, the extracted payload data of the first communication packet and the extracted payload data of the second communication packet for at least one of (i) a period of time reserved for receiving at least one of the first communication packet or the second communication packet or (ii) a contention window defining a period of time during which the one or more devices wait to communicate.

5. The one or more devices of claim 1, wherein the segmenting is further based on at least one of a modulation technique or a data rate that is supported by the one or more devices and the third utility node.

6. A method under control of a first node of a wireless network, the method comprising:

receiving a first communication packet from a second node of the wireless network and a second communication packet from a third node of the wireless network, the first and second communication packets each comprising control data and payload data;

extracting the payload data from the first communication packet and the payload data from the second communication packet;

determining that the payload data of the first communication packet and the payload data of the second communication packet each include consumption data of a resource;

in response to determining that the payload data of the first communication packet and the payload data of the second communication packet each include consumption data of the resource, combining the payload data of the first communication packet with the payload data of the second communication packet to form combined payload data;

determining that a data rate supported by the first node and a fourth node to which the combined payload data is to be transmitted is less than a predetermined data rate;

segmenting the combined payload data into segmented payload data based at least in part on determining that the data rate supported by the first node and the fourth node is less than the predetermined data rate; and

wirelessly transmitting the combined payload data to a fourth node of the wireless network, wherein the wirelessly transmitting includes wirelessly transmitting segments of the segmented payload data individually.

7. The method of claim 6, further comprising:

determining that the payload data of the first communication packet and the payload data of the second communication packet are to be transmitted to a same node or nodes within a predetermined distance of each other;

wherein the payload data of the first communication packet and the payload data of the second communication packet are combined based at least in part on determining that the payload data of the first communication packet and the payload data of the second communication packet are to be transmitted to the same node or nodes within the predetermined distance of each other.

8. The method of claim 6, further comprising:

determining that a data rate at which the combined payload data is to be transmitted is greater than or equal to a data rate at which the first communication packet or the second communication packet is received; and

wherein the payload data of the first communication packet and the payload data of the second communication packet are combined based at least in part on determining that the data rate at which the combined data is to be transmitted is greater than or equal to the data rate at which the first communication packet or the second communication packet is received.

9. The method of claim 6, wherein:

the receiving includes receiving at least one of the first communication packet or the second communication packet at a first data rate via a wireless connection; and

the wirelessly transmitting includes wirelessly transmitting the combined payload data at a second data rate via another wireless connection, the second data rate being greater than or equal to the first data rate.

10. The method of claim 6,

wherein the segmenting is further based at least in part on a modulation technique that is supported by the first node and the fourth node; and

wherein the wirelessly transmitting includes wirelessly transmitting the segments of the segmented payload data individually based at least in part on the modulation technique.

11. The method of claim 6, further comprising:

receiving a third communication packet, the third communication packet indicating that a fourth communication packet will be sent, the third communication packet including a first portion of consumption data;

receiving the fourth communication packet during a period of time reserved for communication of the fourth communication packet, the fourth communication packet including a second portion of the consumption data;

combining payload data of the third communication packet with payload data of the fourth communication packet to form additional combined payload data; and

transmitting the additional combined payload data.

12. The method of claim 6, wherein the wirelessly transmitting includes wirelessly transmitting the combined payload data after a predetermined time period has expired since at least one of the first communication packet or the second communication packet was received.

13. One or more non-transitory computer-readable storage media storing executable instructions that, when executed by one or more processors, cause the one or more processors to perform the method of claim 6.

14. One or more non-transitory computer-readable storage media storing executable instructions that, when executed by one or more processors, cause the one or more processors to perform operations comprising:

receiving a first communication packet and a second communication packet at a first node from at least one second node, the first and second nodes being nodes of a plurality of nodes of a mesh network, the first and second communication packets each comprising control data and payload data, each of the nodes of the mesh network being associated with a utility meter;

extracting the payload data from the first communication packet and the payload data from the second communication packet;

determining that the payload data of the first communication packet and the payload data of the second communication packet each include resource consumption data;

concatenating the payload data of the first communication packet with the payload data of the second communication packet based at least in part on determining that the payload data of the first communication packet and the payload data of the second communication packet each include resource consumption data;

determining that a data rate supported by the first node and a third node of the plurality of nodes to which the concatenated payload data is to be transmitted is less than a predetermined data rate;

segmenting the concatenated payload data into segmented payload data based at least in part on determining that the data rate supported by the first node and the third node is less than the predetermined data rate; and

wirelessly transmitting the segmented payload data to the third node, wherein the wirelessly transmitting includes wirelessly transmitting segments of the segmented payload data individually.

15. The one or more non-transitory computer-readable storage media of claim 14, wherein the segmenting is further based at least in part on a modulation technique that is supported by the first node and at least one other of the plurality of nodes.

16. The one or more non-transitory computer-readable storage media of claim 14, wherein the operations further comprise:

determining that the payload data of the first communication packet and the payload data of the second communication packet are to be transmitted to a same node or nodes within a predetermined distance of each other;

wherein the payload data of the first communication packet and the payload data of the second communication packet are concatenated based at least in part on determining that the payload data of the first communication packet and the payload data of the second communication packet are to be transmitted to the same node or nodes within the predetermined distance of each other.

17. The one or more non-transitory computer-readable storage media of claim 14, wherein the operations further comprise:

determining that a data rate at which the concatenated payload data is to be transmitted is greater than or equal to a data rate at which the first communication packet or the second communication packet is received;

wherein the payload data of the first communication packet and the payload data of the second communication packet are concatenated based at least in part on determining that the data rate at which the concatenated payload data is to be transmitted is greater than or equal to the data rate at which the first communication packet or the second communication packet is received.

18. A method under control of a first node of a wireless network, the method comprising:

receiving a first communication packet from a second node of the wireless network and a second communication packet from a third node of the wireless network, the first and second communication packets each comprising control data and payload data;

extracting the payload data from the first communication packet and the payload data from the second communication packet;

determining that the payload data of the first communication packet and the payload data of the second communication packet each include consumption data of a resource;

in response to determining that the payload data of the first communication packet and the payload data of the second communication packet each include consumption data of the resource, combining the payload data of the first communication packet with the payload data of the second communication packet to form combined payload data;

wirelessly transmitting the combined payload data to a fourth node of the wireless network;

receiving a third communication packet, the third communication packet indicating that a fourth communication packet will be sent, the third communication packet including a first portion of consumption data;

receiving the fourth communication packet during a period of time reserved for communication of the fourth communication packet, the fourth communication packet including a second portion of the consumption data;

combining payload data of the third communication packet with payload data of the fourth communication packet to form additional combined payload data; and

transmitting the additional combined payload data.