CLAIMS

1. One or more devices comprising:

a processing unit configured to perform acts including:

receiving a plurality of communication packets from one or more first nodes, at least one of the plurality of communication packets being received at a first data rate, each communication packet of the plurality of communication packets comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data, the payload data comprising electricity consumption data, water consumption data, and/or natural gas consumption data, wherein the receiving the plurality of communication packets includes receiving the plurality of communication packets from multiple different nodes over one or more wireless connections;

extracting the payload data from each communication packet of the plurality of communication packets;

storing each extracted payload data of the plurality of communication packets for a time period;

determining that a second data rate supported by the one or more devices and one or more second nodes is greater than or equal to the first data rate;

concatenating each extracted payload data of the plurality of communication packets at least partly in response to the determining; and

sending the concatenated payload data to the one or more second nodes in a single communication packet at the second data rate that is greater than or equal to the first data rate.

2. The one or more devices of claim 1, wherein the time period comprises a period of time reserved for receiving at least some of the plurality of communication packets from the one or more first nodes and/or a contention window defining a period of time during which the one or more devices wait to communicate.

3. The one or more devices of claim 1, wherein the sending includes sending the concatenated payload data after a predetermined time period has expired since at least one of the plurality of communication packets was received from the one or more first nodes.

4. The one or more devices of claim 1, wherein the acts further include:

segmenting the concatenated payload data into segmented payloads based at least in part on a modulation technique and/or a data rate that is supported by the one or more devices and the one or more second nodes, and wherein:

the sending includes sending the segmented payloads individually to the one or more second nodes.

5. A method in a first node comprising:

receiving a first communication packet and a second communication packet, at least one of the first communication packet or the second communication packet being received at a first data rate, the first and second communication packets each comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data, wherein the payload data of the first communication packet and the payload data of the second communication packet each comprise electricity consumption data, water consumption data, and/or natural gas consumption data;

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

determining that a second data rate at which the extracted payload data of the first communication packet and the extracted payload data of the second communication packet are to be transmitted is greater than or equal to the first data rate at which at least one of the first communication packet or the second communication packet was received;

concatenating, at least partly in response to the determining, the extracted payload data of the first communication packet with the extracted payload data of the second communication packet to form concatenated payload data; and

transmitting the concatenated payload data at the second data rate.

6. The method of claim 5, wherein:

the control data of the first communication packet identifies a first destination address of a node to which the payload data of the first communication packet is to be sent and the control data of the second communication packet identifies a second destination address of a node to which the payload data of the second communication packet is to be sent; and the method further comprises:

determining that the payload data of the first communication packet and the payload data of the second communication packet are to be sent to a same node or nodes that are within a predetermined distance of each other based at least in part on the first and second destination addresses;

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

7. The method of claim 5, further comprising:

determining that an application associated with the payload data of the first communication packet is of a same type as an application associated with the payload data of the second communication packet; and

wherein the concatenating is based in at least in part on determining that the application associated with the payload data of the first communication packet is of a same type as the application associated with the payload data of the second communication packet.

8. The method of claim 5, further comprising:

determining that the second data rate is less than a predetermined data rate; and

segmenting the concatenated payload data into segmented payloads at least partly in response to determining that the second data rate is less than the predetermined data rate, each of the segmented payloads having less than a predetermined number of bits and/or bytes.

9. The method of claim 5, wherein the receiving includes:

receiving the first communication packet from a second node, the first communication packet indicating that the second communication packet will be sent from the second node, the payload of the first communication packet comprising a first portion of data stored at the second node;

storing the first communication packet for a predetermined time period, the predetermined time period comprising a period of time reserved for communication between the first and second nodes; and

receiving the second communication packet from the second node during the predetermined time period, the payload data of the second communication packet comprising a second portion of the data stored at the second node.

10. The method of claim 5, wherein the transmitting includes transmitting the concatenated payload data after a predetermined time period has expired since the first communication packet and/or the second communication packet was received at the first node.

11. 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 5.

12. A method in a first node comprising:

receiving a first communication packet and a second communication packet from one or more second nodes, at least one of the first communication packet or the second communication packet being received at a first data rate, the first and second communication packets each comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data;

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

storing the extracted payload data for a time period;

determining that a second data rate at which the extracted payload data of the first communication packet and the extracted payload data of the second communication packet are to be transmitted is greater than or equal to the first data rate at which at least one of the first communication packet or the second communication packet was received;

combining, at least partly in response to the determining, the extracted payload data of the first communication packet with the extracted payload of the second communication packet to form combined payload data; and

transmitting the combined payload data to one or more third nodes at the second data rate.

13. The method of claim 12, wherein the time period comprises a period of time reserved for receiving at least some of the communication packets from the one or more second nodes and/or a contention window defining a period of time during which the first node waits to transmit.

14. The method of claim 12, wherein the transmitting includes transmitting the combined payload data after a predetermined time period has expired since the first communication packet and/or the second communication packet was received from the one or more second nodes.

15. The method of claim 12, further comprising:

segmenting the combined payload data into segmented payloads based at least in part on a modulation technique and/or data rate that is supported by the first node and the one or more third nodes, and wherein:

the transmitting includes transmitting the segmented payloads individually to the one or more third nodes with the modulation technique and/or at the date rate that is supported by the first node and the one or more third nodes.

16. 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 12.

17. The method of claim 12, wherein at least one of the extracted payload data of the first communication packet or the extracted payload data of the second communication packet include electricity consumption data, water consumption data, and/or natural gas consumption data.

CLAIMS

WHAT IS CLAIMED IS:

1. One or more devices comprising:

a processing unit configured to perform acts including:

receiving a plurality of communication packets from one or more first nodes, at least one of the plurality of communication packets being received at a first data rate, each communication packet of the plurality of communication packets comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data, the payload data comprising electricity consumption data, water consumption data, and/or natural gas consumption data;

extracting the payload data from each communication packet of the plurality of communication packets;

storing each extracted payload data of the plurality of communication packets for a time period;

determining that (i) each extracted payload data of the plurality of communication packets is to be sent to a same node or nodes within a predetermined distance of each other, (ii) a second data rate supported by the one or more devices and one or more second nodes is greater than or equal to the first data rate, and/or (iii) an application associated with each extracted payload data of the plurality of communication packets is a same application or same type of application;

concatenating each extracted payload data of the plurality of communication at least partly in response to the determining; and

sending the concatenated payload data to the one or more second nodes in a single communication packet at the second data rate that is greater than or equal to the first data rate.

2. The one or more devices of claim 1, wherein the receiving the plurality of communication packets includes receiving the plurality of communication packets from multiple different nodes over one or more wireless connections.

3. The one or more devices of claim 1, wherein the time period comprises a period of time reserved for receiving at least some of the plurality of communication packets from the one or more first nodes and/or a contention window defining a period of time during which the one or more devices wait to communicate.

4. The one or more devices of claim 1, wherein the sending includes sending the concatenated payload data after a predetermined time period has expired since at least one of the plurality of communication packets was received from the one or more first nodes.

5. The one or more devices of claim 1, wherein the acts further include:

segmenting the concatenated payload data into segmented payloads based at least in part on a modulation technique and/or a data rate that is supported by the one or more devices and the one or more second nodes, and wherein:

the sending includes sending the segmented payloads individually to the one or more second nodes.

6. A method comprising:

receiving, at a first node, a first communication packet and a second communication packet, the first and second communication packets each comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data;

extracting, by the first node, the payload data from the first communication packet and the payload data from the second communication packet;

determining, by the first node, to concatenate the extracted payload data of the first communication packet with the extracted payload of the second communication packet;

concatenating, by the first node and at least partly in response to the determining, the extracted payload data of the first communication packet with the extracted payload of the second communication packet to form concatenated payload data; and

sending, by the first node, the concatenated payload data to a second node.

7. The method of claim 6, wherein:

the control data of the first communication packet identifies a first destination address of a node to which the payload data of the first communication packet is to be sent and the control data of the second communication packet identifies a second destination address of a node to which the payload data of the second communication packet is to be sent; and

the determining includes determining to concatenate the extracted payload data of the first communication packet with the extracted payload of the second communication packet based at least in part on the first and second destination

addresses, the first and second destination addresses identifying a same node or nodes located within a predetermined distance of each other.

8. The method of claim 6, wherein:

the first communication packet and/or the second communication packet are received from a third node; and

the determining includes determining to concatenate the extracted payload data of the first communication packet with the extracted payload of the second communication packet based at least in part on a data rate supported by the first and second nodes and a data rate supported by the first and third nodes, the data rate supported by the first and second nodes being greater than the data rate supported by the first and third nodes.

9. The method of claim 6, wherein the determining includes determining to concatenate the extracted payload data of the first communication packet with the extracted payload of the second communication packet based at least in part on an application associated with the payload data of the first communication packet and an application associated with the payload data of the second communication packet, the application associated with the payload data of the first communication packet being of a same type as the application associated with the payload data of the second communication packet.

10. The method of claim 6, wherein:

the receiving includes receiving the first communication packet and/or the second communication packet at a first data rate over a wireless connection; and

the sending includes sending the concatenated payload data at a second data rate over another wireless connection, the second data rate being greater than or equal to the first data rate.

11. The method of claim 6, further comprising:

segmenting the concatenated payload data into segmented payloads based at least in part on a modulation technique and/or data rate that is supported by the first and second nodes, and wherein:

the sending includes sending the segmented payloads individually to the second node with the modulation technique and/or at the date rate that is supported by the first and second nodes.

12. The method of claim 6, wherein the payload data of the first communication packet and the payload data of the second communication packet each comprise electricity consumption data, water consumption data, and/or natural gas consumption data.

13. The method of claim 6, further comprising:

determining that a data rate supported by the first and second nodes is less than a predetermined data rate; and

segmenting the concatenated payload data into segmented payloads at least partly in response to determining that the data rate supported by the first and second nodes is less than the predetermined data rate, each of the segmented payloads having less than a predetermined number of bits and/or bytes, and wherein:

the sending includes sending the segmented payloads individually to the second node.

14. The method of claim 6, wherein the receiving includes:

receiving the first communication packet from a third node, the first communication packet indicating that the second communication packet will be sent from the third node, the payload of the first communication packet comprising a first portion of data stored at the third node;

storing the first communication packet for a predetermined time period, the predetermined time period comprising a period of time reserved for communication between the first and third nodes; and

receiving the second communication packet from the third node during the predetermined time period, the payload data of the second communication packet comprising a second portion of the data stored at the third node.

15. The method of claim 6, wherein the sending includes sending the concatenated payload data after a predetermined time period has expired since the first communication packet and/or the second communication packet was received at the first node.

16. A method comprising:

receiving, at a first node, a first communication packet and a second communication packet from one or more second nodes, the first and second communication packets each comprising control data and payload data, the control data for controlling sending and/or receiving of the payload data;

extracting, at the first node, the payload data from the first communication packet and the payload data from the second communication packet;

storing, at the first node, the extracted payload data for a time period;

determining, at the first node, to combine the extracted payload data of the first communication packet with the extracted payload of the second communication packet;

combining, at the first node and at least partly in response to the determining, the extracted payload data of the first communication packet with the extracted payload of the second communication packet to form combined payload data; and

transmitting, by the first node, the combined payload data to one or more third nodes.

17. The method of claim 16, wherein the time period comprises a period of time reserved for receiving at least some of the communication packets from the one or more second nodes and/or a contention window defining a period of time during which the first node waits to transmit.

18. The method of claim 16, wherein the transmitting includes transmitting the combined payload data after a predetermined time period has expired since the first communication packet and/or the second communication packet was received from the one or more second nodes.

19. The method of claim 16, wherein the determining is based at least in part on destinations to where each of the extracted payload data are to be sent, a data rate supported by the first node and the one or more third nodes, and/or an application associated with each of the extracted payload data.

20. The method of claim 16, further comprising:

segmenting the combined payload data into segmented payloads based at least in part on a modulation technique and/or data rate that is supported by the first node and the one or more third nodes, and wherein:

the transmitting includes transmitting the segmented payloads individually to the one or more third nodes with the modulation technique and/or at the date rate that is supported by the first node and the one or more third nodes.