CLAIMS

1. A repeater endpoint in a network of endpoints having metering functionality, the repeater endpoint comprising:

a processor;

a memory in communication with the processor;

a transceiver configured to send and receive messages between the processor and a network; and

a battery configured to supply power to the processor and the transceiver,

wherein the processor is configured to:

evaluate a repeater availability of the repeater endpoint, wherein the repeater availability comprises communication reliability and battery capacity, wherein the communication reliability includes determining having a sufficient quality of service connection from the repeater endpoint to out-of-range endpoints or a central facility on the network, and wherein the battery capacity of the repeater endpoint includes determining having a capacity above a predetermined level;

transmit signals via the transceiver, the signals intended for the out-of-range endpoints and configured with preambles having a discovery bit to indicate to the out-of-range endpoints availability of repeater functionality at the repeater endpoint sufficient to support repeating messages from the out-of-range endpoints based on the evaluating of the repeater availability of the repeater endpoint;

receive one or more messages at the repeater endpoint from the out-of-range endpoints that require the repeater functionality to be heard at the central facility; and

relay the one or more received messages, wherein the relaying is performed by the repeater endpoint and other repeater endpoints having repeater availability in a shared manner, wherein the shared manner

distributes workload over at least two repeater endpoints having repeater availability to prevent any single endpoint of the repeater endpoints from performing the entire relaying required by the out-of-range endpoints.

2. The repeater endpoint of claim 1, further comprising:

a measurement device in communication with the processor and with power supplied by the battery.

3. The repeater endpoint of claim 2, wherein the measurement device comprises a consumption measurement device.

4. The repeater endpoint of claim 3, wherein the consumption measurement device comprises a water, gas, or oil meter.

5. The repeater endpoint of claim 2, wherein the processor is further configured to:

collect measurement data from the measurement device.

6. The repeater endpoint of claim 5, wherein the collected measurement data is consumption measurement data.

7. The repeater endpoint of claim 5, wherein the collected measurement data describes at least one of water, gas, or oil consumption.

8. The repeater endpoint of claim 5, wherein the processor is further configured to:

transmit the collected measurement data to the central facility.

9. The repeater endpoint of claim 1, wherein the evaluating comprises evaluating links of the repeater endpoint in the network to other endpoints upstream in the network.

10. The repeater endpoint of claim 1, wherein the evaluating comprises evaluating upstream links of the repeater endpoint in the network and determining if the battery capacity of the repeater endpoint in the network is sufficient to share the repeater load.

11. One or more non-transitory computer readable media storing instructions that, when executed by one or more processors of a repeater endpoint in a network of endpoints having metering functionality, perform acts comprising:

evaluating a repeater availability of the repeater endpoint, wherein the repeater availability comprises communication reliability and battery capacity, wherein the communication reliability includes determining having a sufficient quality of service connection from the repeater endpoint to out-of-range endpoints or a central facility on the network, and wherein the battery capacity of the repeater endpoint includes determining having a capacity above a predetermined level;

transmitting signals intended for the out-of-range endpoints and configured with preambles having a discovery bit to indicate to the out-of-range endpoints availability of repeater functionality at the repeater endpoint sufficient to support repeating messages from the out-of-range endpoints based on the evaluating of the repeater availability of the repeater endpoint;

receiving one or more messages at the repeater endpoint from the out-of-range endpoints that require the repeater functionality to be heard at the central facility; and

relaying the one or more received messages, wherein the relaying is performed by the repeater endpoint and other repeater endpoints having repeater availability in a shared manner, wherein the shared manner distributes workload

over at least two repeater endpoints having repeater availability to prevent any single endpoint of the repeater endpoints from performing the entire relaying required by the out-of-range endpoints.

12. The one or more computer readable media of claim 11, wherein the acts further include:

collecting measurement data via a measurement device of the repeater endpoint.

13. The one or more computer readable media of claim 12, wherein the collected measurement data is consumption measurement data.

14. The one or more computer readable media of claim 12, wherein the collected measurement data describes at least one of water, gas, or oil consumption.

15. The one or more computer readable media of claim 12, wherein the acts further include:

transmitting the collected measurement data to the central facility.

16. The one or more computer readable media of claim 11, wherein the evaluating comprises evaluating links of the repeater endpoint in the network to other endpoints upstream in the network.

17. The one or more computer readable media of claim 11, wherein the evaluating comprises evaluating upstream links of the repeater endpoint in the network and determining if the battery capacity of the repeater endpoint in the network is sufficient to share the repeater load.

~~WHAT IS CLAIMED IS:~~

1. A method for improving communications among battery operated network endpoints and a central facility, comprising:

transmitting a signal from endpoints to indicate availability of repeater functionality thereat sufficient to support repeating messages from other endpoints; and

relaying messages from endpoints requiring repeater functionality to be heard at the central facility.

2. A method as in claim 1, wherein transmitting a signal is permitted based on the battery capacity of an endpoint being sufficient to support repeating messages from other endpoints.

3. A method as in claim 2, wherein said sufficient battery capacity comprises such battery capacity being above a predetermined level.

4. A method as in claim 3, wherein transmitting a signal is further permitted based on the endpoint having a sufficient quality of service connection to at least another upstream endpoint or directly to a central facility.

5. A method as in claim 1, wherein transmitting a signal is permitted based on the reliability of the endpoint's communication path to the central facility.

6. A method as in claim 5, wherein transmitting a signal is further permitted based on the battery capacity of an endpoint being sufficient to support repeating messages from other endpoints.

7. A method as in claim 1, wherein transmitting a signal comprises transmitting a discovery bit.

8. A method as in claim 1, further comprising;

associating a measurement device with the endpoint, so that the endpoint may transmit measurement data to the central facility.

9. A method as in claim 8, wherein the measurement device corresponds to a consumption measurement device.

10. A method as in claim 9, wherein the consumption measurement device corresponds to at least one of a water, gas, and oil meter.

11. A method as in claim 1, including establishing a network of endpoints, at least some of which are configured to operate as repeaters.

12. A network, comprising:

a central facility; and

a plurality of endpoints, selected of said plurality of endpoints being battery powered and having capability to operate as a repeater;

wherein said endpoints having capability to operate as a repeater provide an indication of such capability to other endpoints only after determining that they have repeater functionality thereat sufficient to support repeating messages from other endpoints.

13. A network as in claim 12, wherein said indication is provided based on the battery capacity of an endpoint being sufficient to support repeating messages from other endpoints.

14. A network as in claim 13, wherein said sufficient battery capacity comprises such battery capacity being above a predetermined level.

15. A network as in claim 14, wherein said indication is further provided based on the endpoint having a sufficient quality of service connection to at least another upstream endpoint or directly to a central facility.

16. A network as in claim 12, wherein said indication is provided based on reliability of the endpoint's communication path to said central facility.

17. A network as in claim 16, wherein said indication is further provided based on the battery capacity of an endpoint being sufficient to support repeating messages from other endpoints.

18. A network as in claim 12, wherein said indication comprises a signal transmitted by said endpoints.

19. A network as in claim 12, wherein indicating capability to other endpoints to operate as a repeater is permitted based on reliability of the endpoint's communication path to the central facility.

20. A network as in claim 12, wherein endpoints having sufficient battery capacity to support repeating messages transmit a discovery bit.

21. A network as in claim 12, further comprising;

a measurement device associated with at least selected of said plurality of endpoints,

whereby the endpoint may transmit measurement data to the central facility.

22. A network as in claim 21, wherein said measurement device comprises a consumption measurement device.

23. A network as in claim 22, wherein said consumption measurement device corresponds to at least one of a water, gas, and oil meter.

24. A method for improving communications among battery operated network endpoints and a central facility, comprising:

collecting measurement data at at least some of said endpoints;

evaluating transmission conditions of an endpoint in such network;

transmitting to other of such endpoints in such network availability of an endpoint to provide repeater functionality to such other endpoints.

25. A method as in claim 24, wherein evaluating includes evaluating upstream links of an endpoint in such network.

26. A method as in claim 24, wherein evaluating includes determining battery capacity of an endpoint in such network.

27. A method as in claim 26, wherein determining battery capacity includes determining whether such battery capacity is above a predetermined level.

28. A method as in claim 24, including relaying messages from endpoints requiring repeater functionality to be heard at the central facility.

29. A method as in claim 24, wherein:

evaluating includes evaluating upstream links of an endpoint in such network, and determining battery capacity of such endpoint; and

said method includes relaying messages from endpoints requiring repeater functionality to be heard at the central facility.