Claims

1. A method for controlling discontinuous reception (DRX) in a wireless transmit/receive unit (WTRU), the method comprising:

operating at a first DRX cycle length of a plurality of DRX cycle lengths;

operating at a second DRX cycle length of the plurality of DRX cycle lengths, wherein the second DRX cycle length is shorter than the first DRX cycle length;

starting a timer upon commencing operation at the second DRX cycle length;

determining that the timer has expired; and

transitioning from the second DRX cycle length to the first DRX cycle length responsive to determining that the timer has expired.

2. The method as in claim 1, wherein the timer is synchronized with a base station timer.

3. The method as in claim 1, wherein the first DRX cycle length is a default DRX cycle length.

4. The method as in claim 1, further comprising receiving a value for the timer from an evolved NodeB (eNB).

5. The method as in claim 4, wherein the value for the timer is received in a radio resource control (RRC) message.

6. The method as in claim 5, wherein the value for the timer is in units of Long Term Evolution (LTE) frames.

7. The method as in claim 1, wherein each of the plurality of DRX cycle lengths is a multiple of a shortest DRX cycle length.

8. A wireless transmit/receive unit (WTRU), comprising a processor configured to: operate at a first DRX cycle length of a plurality of DRX cycle lengths;

operate at a second DRX cycle length of the plurality of DRX cycle lengths, wherein the second DRX cycle length is shorter than the first DRX cycle length;

start a timer upon commencing operation at the second DRX cycle length;

determine that the timer has expired; and

transition from the second DRX cycle length to the first DRX cycle length responsive to determining that the timer has expired.

9. The WTRU as in claim 8, wherein the timer is synchronized with a base station timer.

10. The WTRU as in claim 8, wherein the first DRX cycle length is a default DRX cycle length.

11. The WTRU as in claim 8, wherein the processor is further configured to receive a value for the timer from an evolved NodeB (eNB).

12. The WTRU as in claim 11, wherein the value for the timer is received in a radio resource control (RRC) message.

13. The WTRU as in claim 12, wherein the value for the timer is in units of Long Term Evolution (LTE) frames.

14. The WTRU as in claim 8, wherein each of the plurality of DRX cycle lengths is a multiple of a shortest DRX cycle length.

Claims

1. A method for performing discontinuous reception (DRX) in a wireless transmit receive unit (WTRU), the method comprising:

receiving a message comprising a DRX configuration from a base station, the DRX configuration comprising a first DRX cycle length, a second DRX cycle length, and an implicit DRX cycle length transition trigger, wherein the implicit DRX cycle length transition trigger indicates a number of DRX cycles at which the WTRU is to perform DRX using the first DRX cycle length prior to implicitly transitioning to performing DRX using the second DRX cycle length;

performing DRX using the first DRX cycle length;

determining that the WTRU has performed DRX using the first DRX cycle length for the number of DRX cycles indicated by the implicit DRX cycle length transition trigger of the DRX configuration; and

transitioning the WTRU from performing DRX using the first DRX cycle length to performing DRX using the second DRX cycle based on determining that the WTRU has performed DRX using the first DRX cycle length for the number of DRX cycles indicated by the implicit DRX cycle length transition trigger, wherein the second DRX cycle length is a multiple of the first DRX cycle length.

2. The method as in claim 1, wherein the message corresponds to a radio resource control (RRC) message, and DRX operation is implemented at a Medium Access Control (MAC) level.

3. The method as in claim 1, wherein the message comprising the DRX configuration is received via higher layer signaling.

4. The method as in claim 1, wherein the number of DRX cycles at which the WTRU is to perform DRX using the first DRX cycle length prior to implicitly transitioning to performing DRX using the second DRX cycle length corresponds to a resume period.

5. The method as in claim 4, wherein while performing DRX using the first DRX cycle length, the WTRU receives a subsequent message from the base station, and the WTRU determines to refrain from transitioning to performing DRX using the second DRX cycle length based on the subsequent message.

6. The method as in claim 5, wherein the subsequent message is a command, and the WTRU operates using a specific DRX cycle length based on the command.

7. A method for performing discontinuous reception (DRX) in a wireless transmit receive unit (WTRU), the method comprising:

receiving a message comprising a DRX configuration from a base station, the DRX configuration comprising a first DRX cycle length, a second DRX cycle length, and an indication of a resume period, wherein the indication of a resume period indicates a number of DRX cycles at which the WTRU is to perform DRX using the first DRX cycle length prior to implicitly transitioning to performing DRX using the second DRX cycle length if no new transmissions are received; and

performing DRX using the first DRX cycle length;

determining that the WTRU has performed DRX using the first DRX cycle length for the number of DRX cycles indicated by the resume period without receiving a new transmission; and

transitioning the WTRU from performing DRX using the first DRX cycle length to performing DRX using the second DRX cycle based on determining that the WTRU has performed DRX using the first DRX cycle length for the number of DRX cycles indicated by the resume period without receiving a new transmission, wherein the second DRX cycle length is a multiple of the first DRX cycle length.

8. The method as in claim 7, further comprising monitoring a control channel for reception of downlink commands.

9. The method as in claim 7, wherein a command received on a control channel causes the WTRU to change its DRX cycle length.

10. The method as in claim 7, further comprising performing DRX using the second DRX cycle length prior to performing DRX using the first DRX cycle length.

11. A wireless transmit receive unit (WTRU), the WTRU comprising s processor configured to:

receive a message comprising a DRX configuration from a base station, the DRX configuration comprising a first DRX cycle length, a second DRX cycle length, and an indication of a resume period, wherein the indication of a resume period indicates a number of DRX cycles at which the WTRU is to perform DRX using the first DRX cycle length prior to implicitly transitioning to performing DRX using the second DRX cycle length if no new transmissions are received; and

perform DRX using the first DRX cycle length;

determinine that the WTRU has performed DRX using the first DRX cycle length for the number of DRX cycles indicated by the resume period without receiving a new transmission; and

transitioning the WTRU from performing DRX using the first DRX cycle length to performing DRX using the second DRX cycle based on determining that the WTRU has performed DRX using the first DRX cycle length for the determined number of DRX cycles indicated by the resume period without receiving a new transmission, wherein the second DRX cycle length is a multiple of the first DRX cycle length.

12. The WTRU as in claim 11, wherein the processor is further configured to monitor a control channel for reception of downlink commands.

13. The WTRU as in claim 11, wherein a command received on a control channel causes the WTRU to change its DRX cycle length.

14. The WTRU as in claim 11, further comprising performing DRX using the second DRX cycle length prior to performing DRX using the first DRX cycle length.

15. The WTRU as in claim 11, wherein the message corresponds to a radio resource control (RRC) message, and the processor is configured to implement DRX operation at a Medium Access Control (MAC) level.

16. The WTRU as in claim 11, wherein the message comprising the DRX configuration is received via higher layer signaling.

17. The WTRU as in claim 11, wherein the processor is configured to determine to refrain from transitioning to performing DRX using the second DRX cycle length on condition that the WTRU receives a subsequent message from the base station while performing DRX using the first DRX cycle length.

18. The WTRU as in claim 17, wherein the subsequent message is a command, and the WTRU is configured to operate using the first DRX cycle length based on the command.