CLAIMS

What is claimed is:

1. A method of providing wireless communication services, the method comprising:

receiving, from a serving cell evolved Node-B (eNodeB), cell information associated with target cell eNodeBs that neighbor the serving cell eNodeB;

evaluating cell reselection criteria;

determining a neighboring target cell eNodeB to reselect;

transmitting, to the serving cell eNodeB, a random access channel (RACH) preamble or RACH message indicating the neighboring target cell eNodeB;

receiving and reading master information block (MIB) and system information messages of the neighboring target cell eNodeB, wherein the MIB and system information messages include information indicating whether the neighboring target cell eNodeB is part of a multimedia broadcast single frequency network (MBSFN) area or whether the cell only supports point-to-point (PTP) service;

confirming that the determined neighboring target cell eNodeB is not part of an MBSFN area;

reselecting to the neighboring target cell eNodeB;

transmitting, to the neighboring target cell eNodeB, a cell update message including capability information and service requirements; and

receiving, from the neighboring target cell eNodeB, a cell update confirmation message indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

2. A method of providing wireless communication services, the method comprising:

receiving, from a serving cell evolved Node-B (eNodeB), cell information associated with target cell eNodeBs that neighbor the serving cell eNodeB;

evaluating cell reselection criteria;

determining a neighboring target cell eNodeB to reselect;

transmitting, to the serving cell eNodeB, a random access channel (RACH) preamble or RACH message indicating the neighboring target cell eNodeB;

receiving and reading master information block (MIB) and system information messages of the neighboring target cell eNodeB, wherein the MIB and system information messages include information indicating whether the neighboring target cell eNodeB is part of a multimedia broadcast single frequency network (MBSFN) area or whether the cell only supports point-to-point (PTP) service;

confirming that the determined neighboring target cell eNodeB is not part of an MBSFN area;

reselecting to the neighboring target cell eNodeB; and

receiving a signal from the neighboring target cell eNodeB indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

3. A wireless transmit/receive unit (WTRU) comprising:

a receiver configured to receive, from a serving cell evolved Node-B (eNodeB), cell information associated with target cell eNodeBs that neighbor the serving cell eNodeB;

a processor configured to evaluate cell reselection criteria and determine a neighboring target cell eNodeB to reselect; and

a transmitter configured to transmit, to the serving cell eNodeB, a random access channel (RACH) preamble or RACH message indicating the neighboring target cell eNodeB, wherein the receiver is further configured to receive and read master information block (MIB) and system information messages of the neighboring target cell eNodeB, wherein the MIB and system information messages include information indicating whether the neighboring target cell eNodeB is part of a multimedia broadcast single frequency network (MBSFN) area or whether the cell only supports point-to-point (PTP) service, wherein the transmitter is further configured to confirm that the determined neighboring target cell eNodeB is not part of an MBSFN, transmit, to the neighboring target

cell eNodeB, a cell update message including capability information and service requirements, and the receiver is further configured to receive, from the neighboring target cell eNodeB, a cell update confirmation message indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

4. A wireless transmit/receive unit (WTRU) comprising:

a receiver configured to receive, from a serving cell evolved Node-B (eNodeB), cell information associated with target cell eNodeBs that neighbor the serving cell eNodeB;

a processor configured to evaluate cell reselection criteria and determine a neighboring target cell eNodeB to reselect; and

a transmitter configured to transmit, to the serving cell eNodeB, a random access channel (RACH) preamble or RACH message indicating the neighboring target cell eNodeB, wherein the receiver is further configured to receive and read master information block (MIB) and system information messages of the neighboring target cell eNodeB, wherein the MIB and system information messages include information indicating whether the neighboring target cell eNodeB is part of a multimedia broadcast single frequency network (MBSFN) area or whether the cell only supports point-to-point (PTP) service, wherein the transmitter is further configured to confirm that the determined neighboring target cell eNodeB is not part of an MBSFN, wherein the processor is further configured to reselect the neighboring target cell eNodeB, and the receiver is further configured to receive an indication indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

5. A method of providing wireless communication services, the method comprising:

receiving neighbor cell information and capability information for a multimedia broadcast single frequency network (MBSFN) area;

transmitting, to a wireless transmit/receive unit (WTRU), cell information

associated with target cell evolved Node-Bs (eNodeBs) that neighbor a serving cell eNodeB;

receiving, from the WTRU, a random access channel (RACH) preamble or RACH message indicating a neighboring target eNodeB; and

transmitting, to the neighboring target cell eNodeB, a signal including the identity of the WTRU and required services information.

6. A serving cell evolved Node-B (eNodeB) for providing wireless communication services, the eNodeB comprising:

a receiver configured to receive cell information associated with target cell eNodeBs for a multimedia broadcast single frequency network (MBSFN) area; and

a transmitter configured to transmit, to a wireless transmit/receive unit (WTRU), the received cell information, wherein the receiver is further configured to receive, from the WTRU, a random access channel (RACH) preamble or RACH message indicating a neighboring target eNodeB, and the transmitter is further configured to transmit, to the neighboring target cell eNodeB, a signal including the identity of the WTRU and required services information.

7. A method of providing wireless communication services, the method comprising:

detecting a plurality of target cell evolved Node-Bs (eNodeBs) that neighbor a serving cell eNodeB;

evaluating cell reselection criteria;

determining a neighboring target cell eNodeB to reselect;

receiving and reading master information block (MIB) and system information messages of the neighboring target cell eNodeB;

transmitting, to the serving cell eNodeB, a random access channel (RACH) preamble or RACH message indicating the neighboring target cell eNodeB;

receiving and reading MIB messages of the neighboring target cell eNodeB again to determine whether the system information has changed; and

if it is determined that the system information has changed, reading the system information and reselecting to the neighboring target cell eNodeB.

8. The method of claim 7 further comprising:

if reselection to the neighboring target cell eNodeB occurs, transmitting, to the neighboring target cell eNodeB, a cell update message including capability information and service requirements; and

receiving, from the neighboring target cell eNodeB, a cell update confirmation message indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

9. The method of claim 7 further comprising:

if reselection to the neighboring target cell eNodeB occurs, receiving, from the neighboring target cell eNodeB, a signal indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

10. A wireless transmit/receive unit (WTRU) comprising:

a receiver configured to detect a plurality of target cell evolved Node-Bs (eNodeBs) that neighbor a serving cell eNodeB;

a processor configured to evaluate cell reselection criteria and determine a neighboring target cell eNodeB to reselect;

the receiver further configured to receive and read master information block (MIB) and system information messages of the neighboring target cell eNodeB;

a transmitter configured to transmit, to the serving cell eNodeB, a random access channel (RACH) preamble or RACH message indicating the neighboring target cell eNodeB; and

the processor being further configured to read MIB messages of the neighboring target cell eNodeB again to determine whether the system information has changed, and if it is determined that the system information has changed, the processor reads the system information and reselects to the

neighboring target cell eNodeB.

11. The WTRU of claim 10 wherein if reselection to the neighboring target cell eNodeB occurs, the transmitter is further configured to transmit, to the neighboring target cell eNodeB, a cell update message including capability information and service requirements, and the receiver is further configured to receive, from the neighboring target cell eNodeB, a cell update confirmation message indicating that the neighboring target cell eNodeB is ready to provide a wireless communication service.

12. The WTRU of claim 11 wherein the processor is further configured to confirm that the determined neighboring target cell eNodeB is not part of a multimedia broadcast single frequency network (MBSFN)

13. A target cell evolved Node-B (eNodeB) for providing wireless communication services, the target cell eNodeB comprising:

a receiver configured to receive, from a serving cell eNodeB, a signal including the identity of a wireless transmit/receive unit (WTRU) and required services information;

a processor configured to determine whether the target cell eNodeB has the required services; and

a transmitter configured to transmit master information block (MIB) and system information messages, and if the target cell eNodeB does not have the required services, the transmitter is further configured to transmit a first message requesting that the target eNodeB be joined to a multicast distribution tree for providing the required services.

14. The target cell eNodeB of claim 13 wherein the receiver is further configured to receive, from the WTRU, a cell update message including capability information and service requirements, and the transmitter is further configured to transmit, to the WTRU, a cell update confirmation message indicating that the

target cell eNodeB is ready to provide a wireless communication service.

15. The target cell eNodeB of claim 14 wherein the receiver is further configured to receive a second message acknowledging the first message requesting that the target cell eNodeB be joined to a multicast distribution tree for providing the required services.

Claims

1. A method implemented in a wireless transmit/receive unit (WTRU), the method comprising:

transmitting, to a serving cell of an evolved Node-B (eNodeB), measurement reports associated with one or more target cells that neighbor the serving cell;

transmitting, to the serving cell, a radio resource control (RRC) message including an indication of one or more frequencies on which the WTRU is currently and/or interested in receiving multimedia broadcast multicast services (MBMS) via an MBMS single frequency network (MBSFN);

receiving, from the serving cell, a handover command to handover to one of the target cells, the one target cell being selected based, at least in part, on the indication;

transmitting, to the one target cell, a random access channel (RACH) preamble or RACH message;

receiving a RACH response from the one target cell; and

receiving, from the one target cell, at least one of the MBMS.

2. The method of claim 1, wherein the handover command is received by way of an RRC connection reconfiguration message.

3. The method of claim 1, wherein the indication indicates a change in the MBMS the WTRU is currently and/or interested in receiving.

4. The method of claim 1, wherein the indication indicates the WTRU is no longer interested in receiving the MBMS that it is currently receiving.

5. The method of claim 1, wherein the RRC message is transmitted in connection with an RRC connection establishment.

6. The method of claim 1, wherein the RRC message includes an indication of preference given to MBMS over unicast.

7. A wireless transmit/receive unit (WTRU) comprising a transmitter and a receiver, wherein:

the transmitter is configured to:

transmit, to a serving cell of an evolved Node-B (eNodeB), measurement reports associated with one or more target cells that neighbor the serving cell; and

transmit, to the serving cell, a radio resource control (RRC) message including an indication of frequencies on which the WTRU is currently and/or interested in receiving multimedia broadcast multicast services (MBMS) via an MBMS single frequency network (MBSFN);

the receiver is configured to receive, from the serving cell, a handover command to handover to one of the target cells, the one target cell being selected based, at least in part, on the indication;

the transmitter is configured to transmit, to the one target cell, a random access channel (RACH) preamble or RACH message;

the receiver is configured to:

receive a RACH response from the one target cell; and

receive, from the one target cell, at least one of the MBMS.

8. The WTRU of claim 7, wherein the receiver is configured to receive the handover command by way of an RRC connection reconfiguration message.

9. The WTRU of claim 7, wherein the indication indicates a change in the MBMS the WTRU is currently and/or interested in receiving.

10. The WTRU of claim 7, wherein the indication indicates the WTRU is no longer interested in receiving the MBMS that it is currently receiving.

11. The WTRU of claim 7, wherein the RRC message is transmitted in connection with an RRC connection establishment.

12. The WTRU of claim 7, wherein the RRC message includes an indication of preference given to MBMS over unicast.

13. A method of providing service continuity for a wireless transmit/receive unit (WTRU), the method comprising:

receiving, at a serving cell of an evolved Node-B (eNodeB) from the WTRU, measurement reports associated with one or more target cells that neighbor the serving cell;

receiving, at the serving cell from the WTRU, a radio resource control (RRC) message including an indication of one or more frequencies on which the WTRU is currently and/or interested in receiving multimedia broadcast multicast services (MBMS) via a MBMS single frequency network (MBSFN);

transmitting, from the serving cell to the WTRU, a handover command to handover to one of the target cells, the one target cell being selected based, at least in part, on the indication;

receiving, at the one target cell from the WTRU, a random access channel (RACH) preamble or RACH message;

transmitting a RACH response from the one target cell to the WTRU; and

transmitting, from the one target cell to the WTRU, at least one of the MBMS.

14. The method of claim 13, wherein the handover command is transmitted by way of an RRC connection reconfiguration message.

15. The method of claim 13, wherein the indication indicates a change in the MBMS the WTRU is currently and/or interested in receiving.

16. The method of claim 13, wherein the indication indicates the WTRU is no longer interested in receiving the MBMS that it is currently receiving.

17. The method of claim 13, wherein the RRC message is received in connection with an RRC connection establishment.

18. The method of claim 13, wherein the RRC message includes an indication of preference given to MBMS over unicast.

19. The method of claim 13, further comprising: selecting, by the serving cell, the one target cell based, at least in part, on the indication.

20. A radio access network adapted for providing service continuity to a wireless transmit/receive unit (WTRU), the radio access network comprising:

an evolved Node-B (eNodeB) associated with a serving cell ("serving-cell eNodeB"), wherein:

the serving-cell eNodeB comprises a transmitter and a receiver;

the receiver is configured to:

receive, from the WTRU, measurement reports associated with one or more target cells that neighbor the serving cell; and

receive, from the WTRU, a radio resource control (RRC) message including an indication of one or more frequencies on which the WTRU is currently

and/or interested in receiving multimedia broadcast multicast services (MBMS) via an MBMS single frequency network (MBSFN);

the transmitter is configured to transmit, to the WTRU, a handover command to handover to one of the target cells, the one target cell being selected based, at least in part, on the indication;

an eNodeB associated with the one target cell ("target-cell eNodeB"), wherein:

the target-cell eNodeB comprises a receiver and a transmitter;

the receiver is configured to receive a random access channel (RACH) preamble or RACH message from the WTRU;

the transmitter is configured to:

transmit a RACH response to the WTRU; and

transmit at least one of the MBMS to the WTRU.

21. The radio access network of claim 20, wherein the handover command is transmitted by way of an RRC connection reconfiguration message.

22. The radio access network of claim 20, wherein the indication indicates a change in the MBMS the WTRU is currently and/or interested in receiving.

23. The radio access network of claim 20, wherein the indication indicates the WTRU is no longer interested in the MBMS it is currently receiving.

24. The radio access network of claim 20, wherein the RRC message is received in connection with an RRC connection establishment.

25. The radio access network of claim 20, wherein the RRC message includes an indication of preference given to MBMS over unicast.

26. The radio access network of claim 20, wherein the radio access network makes the selection of the one target cell.