

CLAIMS

What is claimed is:

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1. An apparatus, comprising:
means for selecting, at a user equipment in a long term evolution system, one of a plurality of code division multiple access systems; and
means for signaling one or more indications of the selected code division multiple access system to a network element.

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2. The apparatus of claim 1, further comprising means for receiving a mapping of the plurality of code division multiple access systems to associated ones of one or more long term evolution systems, and wherein the means for selecting further comprises means for selecting one of the plurality of code division multiple access systems using the mapping.

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3. The apparatus of claim 2, wherein:
the mapping comprises a mapping of a plurality of high rate packet data systems and 1x radio transmission technology systems to the one or more long term evolution systems;
the means for selecting further comprises means for selecting a high rate packet data system and a 1x radio transmission technology system; and
the means for signaling further comprises means for signaling an indication of the selected high rate packet data system and an indication of the selected 1x radio transmission technology system to the network element.

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4. The apparatus of claim 3, wherein the means for selecting further comprises means for selecting the selected 1x radio transmission technology system as a circuit switched fallback system, and wherein the means for signaling further comprises means for signaling an indication of the selected 1x radio transmission system to a base station for purposes of requesting parameters for the selected 1x radio transmission system from the long term evolution system.

5. The apparatus of claim 3, further comprising means for performing, using the long term evolution system, an uplink information transfer of information pertaining to one of the 1x radio transmission technology system or the high rate packet data system, the uplink transfer at least comprising a message indicating which of the 1x radio transmission technology system or the high rate packet data system the information pertains to.
6. The apparatus of claim 1, wherein:
the plurality of code division multiple access systems further comprise a plurality of high rate packet data systems;
selecting further comprises selecting one of the plurality of high rate packet data systems; and
the means for signaling further comprises means for signaling the selected high rate packet data system to a base station in a measurement report.
7. The apparatus of claim 6, wherein the means perform their functions as part of a handover to the selected evolved high rate packet data system.
8. The apparatus of claim 6, wherein:
the plurality of code division multiple access systems further comprise a plurality of 1x radio transmission technology systems;
the means for selecting further comprises means for selecting one of the plurality of 1x radio transmission technology systems; and
the means for signaling further comprises means for signaling the selected 1x radio transmission technology system to a base station in a measurement report.
9. The apparatus of claim 8, wherein the means perform their functions as part of a handover from the long term evolution system to the selected 1x radio transmission technology system and as part of a concurrent handover to the selected high rate packet data system, and wherein the apparatus further comprises means for signaling by the user equipment to the base station an extended service request comprising an indication of the selected 1x radio transmission technology system.

10. The apparatus of claim 1, wherein:
the plurality of code division multiple access systems further comprise a plurality of
1x radio transmission technology systems;
the means for selecting further comprises means for selecting one of the plurality
5 of 1x radio transmission technology systems; and
the means for signaling further comprises means for signaling the selected 1x
radio transmission technology system to a base station in a measurement
report.
- 10 11. The apparatus of claim 10, wherein the means performs their functions as part of a
single radio voice call continuity of a voice over Internet protocol call to the
selected 1x radio transmission technology system.
12. A user equipment comprising the apparatus of any one of claims 1 to 11.
- 15 13. A method, comprising:
selecting, at a user equipment in a long term evolution system, one of a plurality of
code division multiple access systems; and
signaling one or more indications of the selected code division multiple access
20 system to a network element.
14. The method of claim 13, further comprising receiving a mapping of the plurality of
code division multiple access systems to associated ones of one or more long term
evolution systems, and wherein selecting further comprises selecting one of the
25 plurality of code division multiple access systems using the mapping.
15. The method of claim 14, wherein:
the mapping comprises a mapping of a plurality of high rate packet data systems
and 1x radio transmission technology systems to the one or more long term
30 evolution systems;
selecting further comprises selecting a high rate packet data system and a 1x radio
transmission technology system; and
signaling further comprises signaling an indication of the selected high rate packet
data system and an indication of the selected 1x radio transmission
35 technology system to the network element.

16. The method of claim 15, wherein selecting further comprises selecting the selected 1x radio transmission technology system as a circuit switched fallback system, and wherein the signaling further comprises signaling an indication of the selected 1x radio transmission system to a base station for purposes of requesting parameters for the selected 1x radio transmission system from the long term evolution system.
17. The method of claim 15, further comprising performing, using the long term evolution system, an uplink information transfer of information pertaining to one of the 1x radio transmission technology system or the high rate packet data system, the uplink transfer at least comprising a message indicating which of the 1x radio transmission technology system or the high rate packet data system the information pertains to.
18. The method of claim 13, wherein:
the plurality of code division multiple access systems further comprise a plurality of high rate packet data systems;
selecting further comprises selecting one of the plurality of high rate packet data systems; and
signaling further comprises signaling the selected high rate packet data system to a base station in a measurement report.
19. The method of claim 18, performed as part of a handover to the selected evolved high rate packet data system.
20. The method of claim 18, wherein:
the plurality of code division multiple access systems further comprise a plurality of 1x radio transmission technology systems;
selecting further comprises selecting one of the plurality of 1x radio transmission technology systems; and
signaling further comprises signaling the selected 1x radio transmission technology system to a base station in a measurement report.
21. The method of claim 20, performed as part of a handover from the long term evolution system to the selected 1x radio transmission technology system and as part of a concurrent handover to the selected high rate packet data system, and wherein the method further comprises signaling by the user equipment to the base

station an extended service request comprising an indication of the selected 1x radio transmission technology system.

22. The method of claim 13, wherein:

5 the plurality of code division multiple access systems further comprise a plurality of 1x radio transmission technology systems;
selecting further comprises selecting one of the plurality of 1x radio transmission technology systems; and
signaling further comprises signaling the selected 1x radio transmission technology system to a base station in a measurement report.

23. The method of claim 22, performed as part of a single radio voice call continuity of a voice over Internet protocol call to the selected 1x radio transmission technology system.

24. An apparatus, comprising:

15 means for receiving at a network element in a long term evolution system one or more indications of one or more selected ones of a plurality of code division multiple access systems to which the network element has access, the one or more selected code division multiple access systems corresponding to one or more requested actions by a user equipment and selection by the user equipment of the selected ones of the plurality of code division multiple access systems; and
20 means for routing information corresponding to the one or more requested actions to the one or more selected code division multiple access systems.

25. The apparatus of claim 24, wherein the one or more requested actions comprise a pre-registration procedure with a selected code division multiple access system, and wherein the means for routing further comprises means for routing information corresponding to the pre-registration procedure to the selected code division multiple access system.

26. The apparatus of claim 25, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of 1x radio transmission technology systems and a plurality of high rate packet data systems, and wherein the one or more selected plurality of code division multiple

access systems comprises one of a selected 1x radio transmission technology system or a selected high rate packet data system.

27. The apparatus of claim 24, wherein the one or more requested actions comprise a
5 handover of the user equipment to a selected code division multiple access system, and wherein the means for routing further comprises means for routing information corresponding to the handover to the selected code division multiple access system.
- 10 28. The apparatus of claim 27, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of high rate packet data systems, wherein the one or more selected plurality of code division multiple access systems comprises a selected high rate packet data
15 system, and wherein the means for routing further comprises means for routing information corresponding to the handover to the selected high rate packet data system.
29. The apparatus of claim 24, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of
20 1x radio transmission technology systems, wherein the one or more requested actions comprise a circuit switched fallback from a long term evolution system to a 1x radio transmission technology system, and wherein the means for routing further comprises means for routing information corresponding to the circuit switched fallback to the multiple selected code division multiple access systems.
- 25 30. The apparatus of claim 29, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of high rate packet data systems, wherein the one or more requested actions further comprise a handover of a packet data session from the long term evolution system
30 to a selected one of the plurality of high rate packet data systems, and wherein the means for routing further comprises means for routing to the selected high rate packet data system information corresponding to the handover.
31. The apparatus of claim 24, wherein the one or more requested actions comprise a
35 single radio voice call continuity of a voice over Internet protocol call of the user equipment to a selected code division multiple access system, and wherein the

means for routing further comprises means for routing information corresponding to the single radio voice call continuity to the selected code division multiple access system.

5 32. The apparatus of claim 31, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of 1x radio transmission technology systems, and wherein the means for routing further comprises means for routing information corresponding to the single radio voice call continuity to the selected 1x radio transmission technology systems.

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33. The apparatus of any one of claims 24 to 32, wherein the means for routing information further comprises means for tunneling the information through the long term evolution system to the one or more selected code division multiple access systems.

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34. A mobility management entity in the long term evolution system comprising the apparatus of any one of claims 24 to 33.

20 35. A method, comprising:
receiving at a network element in a long term evolution system one or more indications of one or more selected ones of a plurality of code division multiple access systems to which the network element has access, the one or more selected code division multiple access systems corresponding to one or more requested actions by a user equipment and selection by the
25 user equipment of the selected ones of the plurality of code division multiple access systems; and
routing information corresponding to the one or more requested actions to the one or more selected code division multiple access systems.

30 36. The method of claim 35, wherein the one or more requested actions comprise a pre-registration procedure with a selected code division multiple access system, and wherein routing further comprises routing information corresponding to the pre-registration procedure to the selected code division multiple access system.

35 37. The method of claim 36, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of

1x radio transmission technology systems and a plurality of high rate packet data systems, and wherein the one or more selected plurality of code division multiple access systems comprises one of a selected 1x radio transmission technology system or a selected high rate packet data system.

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38. The method of claim 35, wherein the one or more requested actions comprise a handover of the user equipment to a selected code division multiple access system, and wherein the routing further comprises routing information corresponding to the handover to the selected code division multiple access system.

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39. The method of claim 38, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of high rate packet data systems, wherein the one or more selected plurality of code division multiple access systems comprises a selected high rate packet data system, and wherein routing further comprises routing information corresponding to the handover to the selected high rate packet data system.

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40. The method of claim 35, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of 1x radio transmission technology systems, wherein the one or more requested actions comprise a circuit switched fallback from a long term evolution system to a 1x radio transmission technology system, and wherein routing further comprises routing information corresponding to the circuit switched fallback to the multiple selected code division multiple access systems.

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41. The method of claim 40, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of high rate packet data systems, wherein the one or more requested actions further comprise a handover of a packet data session from the long term evolution system to a selected one of the plurality of high rate packet data systems, and wherein routing further comprises routing to the selected high rate packet data system information corresponding to the handover.

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35 42. The method of claim 35, wherein the one or more requested actions comprise a single radio voice call continuity of a voice over Internet protocol call of the user

equipment to a selected code division multiple access system, and wherein routing further comprises routing information corresponding to the single radio voice call continuity to the selected code division multiple access system.

- 5 43. The method of claim 42, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of 1x radio transmission technology systems, and wherein routing further comprises routing information corresponding to the single radio voice call continuity to the selected 1x radio transmission technology systems.

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44. The method of any one of claims 35 to 43, wherein routing information further comprises tunneling the information through the long term evolution system to the one or more selected code division multiple access systems.

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45. A apparatus, comprising:
means for signaling, at a network element in a long term evolution system, to a user equipment indications of a mapping of a plurality of code division multiple access systems to associated ones of one or more long term evolution systems; and
20 means for receiving signaling from the user equipment comprising one or more indications of one or more selected code division multiple access systems selected by the user equipment.

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46. The apparatus of claim 45, further comprising means, responsive to the receiving, for signaling the one or more indications of the one or more selected code division multiple access systems to a second network element in the long term evolution system.

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47. The apparatus of claim 46, further comprising:
30 means for receiving signaling corresponding to one or more requested actions by a user equipment and corresponding to the one or more selected code division multiple access systems; and
means for signaling the one or more requested actions to the second network element.

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48. The apparatus of claim 45, further comprising means for requesting via signaling the user equipment to perform measurements of the one or more selected code division multiple access systems.
- 5 49. The apparatus of claim 48, wherein the requesting is performed in response to signaling received from a second network element in the long term evolution system comprising an indication of at least a 1x radio transmission technology system, and wherein the means for requesting via signaling the user equipment to perform measurements of the one or more selected code division multiple access systems further comprises means for requesting via signaling the user equipment to perform measurements of the 1x radio transmission technology system.
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50. The apparatus of claim 45, wherein the one or more signaled indications comprises one or both of an indication of a selected 1x radio transmission technology system and a selected high rate packet data system, and wherein the apparatus further comprises means for using the indications to select a set of CDMA2000 parameters associated with one or both of the selected 1x radio transmission technology system or the selected high rate packet data system to send to the user equipment, and means for sending the set of CDMA2000 parameters to the user equipment.
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51. A base station in the long term evolution system comprising the apparatus of any one of claims 45 to 50.
- 25 52. A method, comprising:
signaling, at a network element in a long term evolution system, to a user equipment indications of a mapping of a plurality of code division multiple access systems to associated ones of one or more long term evolution systems; and
30 receiving signaling from the user equipment comprising one or more indications of one or more selected code division multiple access systems selected by the user equipment.

53. The method of claim 52, further comprising signaling, responsive to the receiving, the one or more indications of the one or more selected code division multiple access systems to a second network element in the long term evolution system.
- 5 54. The method of claim 53, further comprising:
receiving signaling corresponding to one or more requested actions by a user
equipment and corresponding to the one or more selected code division
multiple access systems; and
signaling the one or more requested actions to the second network element.
- 10 55. The method of claim 52, further comprising requesting via signaling the user
equipment to perform measurements of the one or more selected code division
multiple access systems.
- 15 56. The method of claim 55, wherein the requesting is performed in response to
signaling received from a second network element in the long term evolution
system comprising an indication of at least a 1x radio transmission technology
system, and wherein the requesting via signaling the user equipment to perform
measurements of the one or more selected code division multiple access systems
20 further comprises requesting via signaling the user equipment to perform
measurements of the 1x radio transmission technology system.
- 25 57. The method of claim 52, wherein the one or more signaled indications comprises
one or both of an indication of a selected 1x radio transmission technology system
and a selected high rate packet data system, and wherein the method further
comprises using the indications to select a set of CDMA2000 parameters
associated with one or both of the selected 1x radio transmission technology
system or the selected high rate packet data system to send to the user
equipment, and sending the set of CDMA2000 parameters to the user equipment.
- 30 58. A communication system comprising one or more of the following: the apparatus
of any one of claims 1 to 11, the apparatus of any one of claims 24 to 33, or the
apparatus of any one of claims 45 to 50.

59. A computer program comprising program code for executing the method according to any of claims 13 to 23, 35 to 44, or 52 to 57.

60. The computer program according to claim 59, wherein the computer program is a computer program product comprising a computer-readable medium bearing computer program code embodied therein for use with a computer.

CLAIMS

What is claimed is:

1. A method, comprising:
selecting, at a user equipment in a long term evolution system, one of a plurality of code division multiple access systems; and
signaling one or more indications of the selected code division multiple access system to a network element.
2. The method of claim 1, further comprising receiving a mapping of the plurality of code division multiple access systems to associated ones of one or more long term evolution systems, and wherein selecting further comprises selecting one of the plurality of code division multiple access systems using the mapping.
3. The method of claim 2, wherein:
the mapping comprises a mapping of a plurality of high rate packet data systems and 1x radio transmission technology systems to the one or more long term evolution systems;
selecting further comprises selecting a high rate packet data system and a 1x radio transmission technology system; and
signaling further comprises signaling an indication of the selected a high rate packet data system and an indication of the selected 1x radio transmission technology system to the network element.
4. The method of claim 3, wherein selecting further comprises selecting the selected 1x radio transmission technology system as a circuit switched fallback system, and wherein signaling further comprises signaling an indication of the selected 1x radio transmission system to a base station for purposes of requesting parameters for the selected 1x radio transmission system from the long term evolution system.

5. The method of claim 3, further comprising performing an uplink information transfer using one of the 1x radio transmission technology system or the high rate packet data system, the uplink transfer at least comprising a message indicating which of the 1x radio transmission technology system or the high rate packet data system is used.
6. The method of claim 1, wherein:
the plurality of code division multiple access systems further comprise a plurality of high rate packet data systems;
selecting further comprises selecting one of the plurality of high rate packet data systems; and
signaling further comprises signaling the selected high rate packet data system to a base station in a measurement report further comprising one or more indications of one or more measurements of the selected high rate packet data system.
7. The method of claim 6, performed as part of a handover to the selected evolved high rate packet data system.
8. The method of claim 6, wherein:
the plurality of code division multiple access systems further comprise a plurality of 1x radio transmission technology systems;
selecting further comprises selecting one of the plurality of 1x radio transmission technology systems; and
signaling further comprises signaling the selected 1x radio transmission technology system to a base station in a measurement report.
9. The method of claim 8, performed as part of a handover from one radio access technology to the selected 1x radio transmission technology system and as part of a concurrent handover to the selected high rate packet data system, and wherein the method further comprises signaling by the user equipment to the base station an extended service request comprising an indication of the selected 1x radio transmission technology system.

10. The method of claim 1, wherein:
the plurality of code division multiple access systems further comprise a plurality of 1x radio transmission technology systems;
selecting further comprises selecting one of the plurality of 1x radio transmission technology systems; and
signaling further comprises signaling the selected 1x radio transmission technology system to a base station in a measurement report.
11. The method of claim 10, performed as part of a single radio voice call continuity of a voice over Internet protocol call to the selected 1x radio transmission technology system.
12. An apparatus comprising:
one or more processors; and
one or more memories including computer program code,
the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform any one of the previous method claims.
13. A method, comprising:
receiving at a network element in a long term evolution system one or more indications of one or more selected ones of a plurality of code division multiple access systems to which the network element has access, the one or more selected code division multiple access systems corresponding to one or more requested actions by a user equipment and selection by the user equipment of the selected ones of the plurality of code division multiple access systems; and
routing information corresponding to the one or more requested actions to the one or more selected code division multiple access systems.
14. The method of claim 13, wherein the one or more requested actions comprise a pre-registration procedure with a selected code division multiple access system, and

wherein routing further comprises routing information corresponding to the pre-registration procedure to the selected code division multiple access system.

15. The method of claim 14, wherein the plurality of code division multiple access systems to which the network element has access further comprises a plurality of 1x radio transmission technology systems and a plurality of high rate packet data systems, and wherein the one or more selected plurality of code division multiple access systems comprises one of a selected 1x radio transmission technology system or a selected high rate packet data system.
16. An apparatus comprising:
one or more processors; and
one or more memories including computer program code,
the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform any one of the previous method claims.
17. A method, comprising:
signaling, at a network element in a long term evolution system, to a user equipment indications of a mapping of a plurality of code division multiple access systems to associated ones of one or more long term evolution systems; and
receiving signaling from the user equipment comprising one or more indications of one or more selected code division multiple access systems selected by the user equipment.
18. The method of claim 17, further comprising, responsive to the receiving, signaling the one or more indications of the one or more selected code division multiple access systems to a second network element in the long term evolution system.
19. The method of claim 18, further comprising receiving signaling corresponding to one or more requested actions by a user equipment and corresponding to the one or more

selected code division multiple access systems, and signaling the one or more requested actions to the second network element.

20. The method of claim 17, further comprising requesting via signaling the user equipment perform measurements of the one or more selected code division multiple access systems.
21. The method of claim 20, wherein the requesting is performed in response to signaling received from a second network element in the long term evolution system comprising an indication of at least a 1x radio transmission technology system, and wherein the requesting via signaling the user equipment perform measurements of the one or more selected code division multiple access systems further comprises requesting via signaling the user equipment perform measurements of the 1x radio transmission technology system.
22. The method of claim 17, wherein the one or more signaled indications comprises one or both of an indication of a selected 1x radio transmission technology system and a selected high rate packet data system, and wherein the method further comprises using the indications to select a set of CDMA2000 parameters associated with one or both of the selected 1x radio transmission technology system or the selected high rate packet data system to send to the user equipment, and sending the set of CDMA2000 parameters to the user equipment.
23. An apparatus comprising:
one or more processors; and
one or more memories including computer program code,
the one or more memories and the computer program code configured, with the one or more processors, to cause the apparatus to perform any one of the previous method claims.