CLAIMS

1. A computerized LTE (Long-Term Evolution) mobile communication system serving a population of LTE mobile communicators using a communication network comprising a plurality of mobile communication network LTE nodes which includes at least one LTE base station serving the population of LTE mobile communicators, the system comprising:

a processor configured for at least once commanding that processor-identified information be sent from at least one individual LTE mobile communicator from among said population of LTE mobile communicators to at least first and second LTE serving nodes from among said plurality of mobile communication network LTE nodes, wherein said information is mutually redundant over said at least first and second LTE serving nodes;

wherein handover functionality is used to enable the individual LTE mobile communicator to be physically handed over from one to another of said LTE serving nodes, for enhancing quality of information flowing over at least one of downlink and uplink channels;

wherein said handover functionality comprises handover functionality provided by 3GPP Long Term Evolution (LTE) protocol.

2. The system according to claim 1 wherein data is sent to said first LTE serving node and redundancy information derived from said data is sent to said second LTE serving node.

3. The system according to claim 1 wherein identical data is sent to said first and second LTE serving nodes.

4. The system according to claim 3 wherein first data is sent to said first LTE serving node and only a subset of said first data is sent to said second LTE serving node.

5. The system according to claim 4 wherein said first data comprises a sequence of packets sent to said first LTE serving node and said subset comprises a subsequence within said sequence which is sent to said second LTE serving node.

6. The system according to claim 1 wherein said quality of information is enhanced in that probability of packet delay is reduced.

7. The system according to claim 1 wherein said quality of information is enhanced in that probability of packet loss is reduced.

8. The system according to claim 1 wherein said quality of information is enhanced in that accuracy of packets received is increased.

9. The system according to claim 1 wherein said quality of information is enhanced in that probability that packets will be rejected is decreased.

10. The system according to claim 1 wherein at least a portion of control functionality employed to enhance quality of information by controlling said mutually redundant information is located in a base station serving said individual communicator.

11. The system according to claim 1 wherein at least a portion of control functionality employed to enhance quality of information by controlling said mutually redundant information is located centrally in a core serving a base station serving said individual communicator.

12. The system according to claim 1 wherein at least a portion of control functionality employed to enhance quality of information by controlling said mutually redundant information is located in a relay served by at least one base station and serving said LTE individual communicator.

13. The system according to claim 1 wherein said individual mobile communicator is operative to at least pseudo-randomly select at least one LTE serving node from a set of candidate serving nodes defined within the plurality of mobile communication network LTE nodes.

14. The system according to claim 1 wherein said individual mobile communicator is operative to select, at intervals, at least one LTE serving node from a set of candidate serving nodes defined within said plurality of mobile communication network LTE nodes, on a round-robin basis.

15. The system according to claim 1 wherein said individual mobile communicator is operative to use a load-dependent scheme to select at least one LTE serving node from a set of candidate serving nodes defined within said plurality of mobile communication network LTE nodes.

16. The computerized mobile communication system according to claim 1,

wherein, in at least one instance in which, due to backhauling addition of another user results in an overloaded backhauling line and low utilization of radio channels,

handover is effected on a round robin basis, such that periodically, an individual mobile communicator transfers to a next on line in a list of serving nodes proximal enough to receive from the individual LTE mobile communicator thereby to enlarge overall network capacity, thereby to prevent increase in service delay and service queues of users connected to an individual base station.

17. The system according to claim 1

wherein said at least one LTE base station includes a plurality of LTE base stations comprising at least first and second LTE base stations and wherein the first LTE base station operates as a serving base station and is operative to perform a handover of a connection of a specific mobile communicator from the first LTE base station to the second LTE base station including selecting said second LTE base station so as to improve statistical distribution of mobile communicators over available serving base stations from among the plurality of LTE base stations,

thereby to enable the specific mobile communicator in the population of LTE mobile communicators to at least once associate itself with the serving base station using a processor-based serving base station selection functionality operative for selecting said serving base station;

wherein, in at least one instance in which, due to backhauling, addition of another user results in an overloaded backhaul line and low utilization of radio channels, a current serving base station performs a handover of the connection of the mobile communicator from the current serving base station to a next LTE base station which becomes the next current serving base station and is the next on line in a list of LTE base stations proximal

enough to receive from the mobile communicator, thereby to enlarge at least one of capacity and reliability.

18. The system according to claim 17 wherein the individual LTE mobile communicator is operative to at least pseudo-randomly select the serving node from a set of candidate serving nodes defined within the plurality of nodes wherein the set of candidate serving nodes includes all nodes sufficiently close to the individual mobile communicator to adequately receive transmissions therefrom.

19. The system according to claim 17 which employs a fair balancing scheme, designed to ensure that total throughput of descendants served by various relays is as balanced as possible over available relays.

20. The system according to claim 19 wherein flitting between relays occurs in a weighted manner such that the mobile communicator spends more time with the relay that relays throughput faster.

21. The system according to claim 17 wherein said second LTE base station is selected to improve distribution of the population of mobile communicators over the plurality of LTE base stations,

and to increase use of available bandwidth to and from at least one LTE base station which provides the mobile communicator with an acceptable signal to noise ratio,

wherein, in at least one instance in which, due to backhauling, addition of another user results in an overloaded backhaul line and low utilization of radio channels, periodically, after a predetermined time interval, the current serving base station performs a handover of the connection of the mobile communicator from the current serving base station to a next LTE base station which becomes the next current serving base station and is the next on line in a list of LTE base stations proximal enough to receive from the mobile communicator, to enlarge overall network capacity and to prevent increase in service delay and service queues of users connected to an individual base station.

22. The system according to claim 1 which employs cell hopping, comprising at least one initiated, synchronized, scheduled handover of at least one mobile station in the network, is utilized to better exploit at least one backhauling resource of the network.

23. A system according to claim 1 wherein at least one individual mobile communicator from among said population of LTE mobile communicators is controlled for at least once sending processor-identified mutually redundant information over a set of at least first and second LTE serving nodes from among said plurality of mobile communication network LTE nodes according to a handover rate.

24. A system according to claim 1 wherein bandwidth capacity is increased using backhauling radio links.

25. A computerized LTE (Long-Term Evolution) mobile communication method serving a population of LTE mobile communicators using a communication network comprising a plurality of mobile communication LTE network nodes which includes a population of LTE base stations including at least one LTE base station serving the population of LTE mobile communicators, the method comprising:

providing functionality operative for at least once commanding that processor-identified information be sent from at least one individual LTE mobile communicator from among said population of LTE mobile communicators to at least first and second LTE serving nodes from among said plurality of mobile communication network LTE nodes wherein said information is mutually redundant over said at least first and second LTE serving nodes; and

using handover functionality to enable the individual LTE mobile communicator to be physically handed over from one to another of said LTE serving nodes, while enhancing quality of information flowing over at least one of downlink and uplink channels;

wherein said handover functionality comprises handover functionality provided by 3GPP Long Term Evolution (LTE) protocol.

26. A method according to claim 25 and also comprising providing a load-balancing scheme operative to associate a mobile communicator with a serving node, including use of constant periodic time slot sharing to enhance statistical distribution of mobile communicators between available serving nodes.

27. A method according to claim 25 and also comprising providing a load-balancing scheme operative to associate a mobile communicator with a serving node, including use of

random distribution over time to enhance statistical distribution of mobile communicators between available serving nodes.

28. A method according to claim 25 and also comprising providing a load-balancing scheme operative to associate a mobile communicator with a serving node, including use of random distribution over destination to enhance statistical distribution of mobile communicators between available serving nodes.

29. A method according to claim 25 and also comprising providing a load-balancing scheme operative to associate a mobile communicator with a serving node, including use of proportional sharing according to the load and link quality to enhance statistical distribution of mobile communicators between available serving nodes.

30. A computer program product, comprising a non-transitory tangible computer readable medium having computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a computerized LTE (Long-Term Evolution) mobile communication method serving a population of LTE mobile communicators using a communication network comprising a plurality of mobile communication LTE network nodes which includes a population of LTE base stations including at least one LTE base station serving the population of LTE mobile communicators, the method comprising:

providing functionality operative for at least once commanding that processor-identified information be sent from at least one individual LTE mobile communicator from among said population of LTE mobile communicators to at least first and second LTE serving nodes from among said plurality of mobile communication network LTE nodes wherein said information is mutually redundant over said at least first and second LTE serving nodes; and

using handover functionality to enable the individual LTE mobile communicator to be physically handed over from one to another of said LTE serving nodes, while enhancing quality of information flowing over at least one of downlink and uplink channels;

wherein said handover functionality comprises handover functionality provided by 3GPP Long Term Evolution (LTE) protocol.