Cl.

1. A method for use in a user equipment (UE) comprising:

receiving an indication of a type of connectivity available in a telecommunication cell;

wherein the indication of the type of connectivity available indicates the availability of one or more of: local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; or remote connectivity.

2. The method of claim 1 wherein upon receipt of an indication that LIPA connectivity is available, the UE provides an indication to the upper layers that the connectivity is available.

3. The method of claim 1 or claim 2 wherein receiving an indication of a type of connectivity available in a telecommunication cell comprises receiving an indication of a type of connectivity available in any one of:

a GERAN/UTRAN femto cell;

a GERAN/UTRAN macro cell;

a GERAN/UTRAN CSG cell;

an E-UTRAN femto cell;

an E-UTRAN macro cell;

an E-UTRAN CSG cell;

WLAN cells; or

non-3GPP cells.

4. The method of any one of claims 1 to 3 wherein receiving an indication comprises receiving at least one of:

an indication of whether specific types of connectivity are available; or

an indication of whether specific types of connectivity are not available.

5. The method of any one of claims 1 to 4 wherein receiving an indication of the type of connectivity available comprises receiving at least one of:

LIPA connectivity supported;

LIPA connectivity not supported;

SIPTO connectivity supported;

SIPTO connectivity not supported;

remote connectivity supported; or

remote connectivity not supported.

6. The method of any one of claims 1 to 5 wherein receiving the indication of a type of connectivity available occurs in the non-access stratum (NAS) functional layer.

7. The method of claim 6 further comprising providing the indication to upper layers.

8. The method of claim 6 wherein receiving the indication of a type of connectivity occurs during one of: attachment; when requesting an additional packet data protocol (PDP) context; or when requesting a packet data network (PDN) connection.

9. The method of claim 6, wherein receiving the indication of a type of connectivity comprises receiving a message, which is at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT REJECT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a PDN CONNECTIVITY REJECT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

10. The method of claim 6, wherein receiving the indication of a type of connectivity includes receiving a Supported Connectivity Type information element in at least one of an ACTIVATE PDP CONTEXT ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP

CONTEXT REJECT message; a PDN CONNECTIVITY ACCEPT message; a PDN CONNECTIVITY REJECT message; or a ROUTING AREA UPDATE REJECT message.

11. The method of claim 1, further comprising connecting to a connection for which the default EPS bearer context, or default PDP context, was activated with an APN authorized to use LIPA.

12. The method of claim 1 wherein receiving the indication of a type of connectivity available occurs in the access stratum (AS) functional layer.

13. The method of claim 12 further comprising providing the indication to upper layers.

14. The method of claim 12 wherein receiving the indication of a type of connectivity occurs during one or more of: initial attach to the network; handover of the UE from a macro cell to a femto cell or a closed subscriber group (CSG) cell; idle mobility of the UE from a macro cell to a femto cell or a CSG cell; handover of the UE from a 3GPP macro cell,a 3GPP femto cell, or a 3GPP CSG cell to a non-3GPP access; or handover of the UE from a non-3GPP access to a 3GPP femto cell or a 3GPP CSG cell.

15. The method of claim 12 wherein receiving the indication of a type of connectivity available comprises receiving a Supported Connectivity Type indication broadcast over a radio channel.

16. The method of claim 12 further comprising, upon receiving the indication of a type of connectivity available, determining whether or not to establish PDN connections using LIPA.

17. A method for use in a network element comprising:

providing an indication of a type of connectivity available in a telecommunication cell;

wherein the indication of the type of connectivity available indicates one or more of: local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; or remote connectivity.

18. The method of claim 17 wherein the network element is one of a closed subscriber group (CSG) cell; a HeNB; or a HNB.

19. The method of claim 17 or 18 wherein providing the indication of a type of connectivity available includes broadcasting a Supported Connectivity Type indication over a radio channel.

20. The method of any one of claims 17 to 19 wherein the network element is one of a Mobility Management Entity (MME) or an Serving GPRS Support Node (SGSN).

21. The method of claim 17 wherein providing the indication includes providing the indication if the UE is attaching to a CSG cell.

22. The method of any one of claims 17 to 20 wherein providing an indication of a type of connectivity available in a telecommunication cell comprises providing an indication of a type of connectivity available in any one of:

a GERAN/UTRAN femto cell;

a GERAN/UTRAN macro cell;

a GERAN/UTRAN CSG cell;

an E-UTRAN femto cell;

an E-UTRAN macro cell;

an E-UTRAN CSG cell;

WLAN cells; or

non-3GPP cells.

23. The method of any one of claims 17 to 20 wherein providing an indication comprises providing at least one of:

an indication of whether specific types of connectivity are available; or

an indication of whether specific types of connectivity are not available.

24. The method of any one of claims 17 to 20 wherein providing an indication of the type of connectivity available comprises providing at least one of:

LIPA connectivity supported;

LIPA connectivity not supported;

SIPTO connectivity supported;

SIPTO connectivity not supported;

remote connectivity supported; or

remote connectivity not supported.

25. The method of any one of claims 17 to 24 wherein providing the indication of a type of connectivity available occurs in the non-access stratum (NAS) functional layer.

26. The method of any one of claim 25 further comprising providing the indication to upper layers.

27. The method of claim 25 wherein providing the indication of a type of connectivity occurs during one of: attachment; when requesting an additional packet data protocol (PDP) context; or when requesting a packet data network (PDN) connection.

28. The method of claim 25, wherein providing the indication of a type of connectivity comprises sending at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT REJECT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a PDN CONNECTIVITY REJECT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

29. The method of claim 25, wherein providing the indication of a type of connectivity includes providing a Supported Connectivity Type information element in at least one of an ACTIVATE PDP CONTEXT ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT REJECT message; a PDN CONNECTIVITY ACCEPT message; a PDN CONNECTIVITY REJECT message; or a ROUTING AREA UPDATE REJECT message.

30. A method for use in a user equipment (UE) comprising:

receiving application connectivity policies in a functional layer above a non-access stratum (NAS) layer;

receiving an indication of at least one mobility event in the functional layer above the NAS layer from a functional layer below the NAS layer;

determining whether a specific type of connectivity is available based upon the application connectivity policies and the indication of the at least one mobility event.

31. The method of claim 30 wherein receiving application connectivity policies comprises receiving policies that define one or more of:

whether a particular access is preferable for an application with respect to other accesses;

whether a particular access is forbidden for an application;

whether one or more of: local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; or remote connectivity are preferable for an application when the UE is connected to a closed subscriber group (CSG) cell;

whether one or more of: LIPA connectivity; SIPTO connectivity; or remote connectivity are forbidden for an application when the UE is connected to a CSG cell;

whether one or more of: LIPA connectivity; SIPTO connectivity; or remote connectivity are the only type of connectivity that an application can use when the UE is connected to a CSG cell;

whether an application can use a certain type of connectivity in a specific CSG cell or set of CSG cells; or

whether, if LIPA connectivity is available, an application should request LIPA connectivity and remote connectivity simultaneously.

32. The method of claim 31 wherein receiving an indication of at least one mobility event comprises receiving an indication of one or more of:

an active handover to a closed subscriber group (CSG) cell; an active handover from a CSG cell; a Tracking Area Update (TAU) / Routing Area Update (RAU) in a CSG cell; or an active handover to a different radio access technology (RAT).

33. The method of claim 32 comprising:

receiving an indication of an active handover to, or from, a CSG cell further comprises at least one of:

receiving a closed subscriber group identifier (CSG ID) of the CSG cell; or

receiving an indication of the type of connectivity available in the CSG cell.

34. The method of claim 30 wherein determining whether a specific type of connectivity is available comprises determining if the type of connectivity is one or more of:

local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; or remote connectivity.

35. The method of any one of claims 30 to 34 wherein determining whether a specific type of connectivity is available further comprises at least one of:

suspending operation of at least one application that requires a type of connectivity that is determined not to be available;

activating operation of at least one application that requires a type of connectivity that is determined to be available.

36. The method of claim 35 further comprising at least one of:

suspending operation of at least one application comprises placing one or more of the at least one application in a dormant state in which the one or more application remains active, but does not exchange data; or

activating operation of at least one application comprises waking one or more of the at least one application that is in a dormant state.

37. A method for use in a network element comprising:

providing an indication of a type of connectivity selected for a UE in a telecommunication cell;

wherein the indication of the type of connectivity selected for the UE indicates one or more of: local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; or remote connectivity.

38. The method of claim 37 wherein providing an indication of a type of connectivity is performed in response to receiving a request for connectivity.

39. The method of claim 37 or claim 38 wherein providing an indication of a type of connectivity comprises providing:

an indication of a supported type of connectivity available in a telecommunication cell;

an indication of a type of connectivity other than that which was requested that is available in a telecommunication cell; and

an indication that a requested type of connectivity is not available in a telecommunication cell.

40. The method of any one of claims 37 to 39, wherein providing the indication of a type of connectivity comprises providing at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT REJECT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

41. A method for use in a user equipment (UE) comprising:

receiving an indication of a type of connectivity selected for the UE in a telecommunication cell;

wherein the indication of the type of connectivity selected for the UE indicates one or more or of: local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; or remote connectivity.

42. The method of claim 41 wherein upon receipt of an indication that LIPA connectivity has been selected for the UE, the UE provides an indication to the upper layers that the connectivity is provided by LIPA.

43. The method of claim 41 wherein receiving the indication of a type of connectivity available occurs in the non-access stratum (NAS) functional layer.

44. The method of any one of claims 41 to 43, wherein receiving the indication of the type of connectivity selected for the UE occurs upon receiving a message, which is at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

45. The method of any one of claims 41 to 43, wherein receiving the indication of a type of connectivity selected for the UE includes providing a Supported Connectivity Type information element in one of an ACTIVATE PDP CONTEXT ACCEPT message or a ROUTING AREA UPDATE ACCEPT message.

46. The method of any one of claims 41 to 45 wherein receiving an indication of a type of connectivity occurs in response to receiving a request for connectivity.

CLAIMS

1. A method for use in user equipment (UE) comprising:

in the non-access stratum (NAS) functional layer,

requesting a packet data protocol (PDP) context or a packet data network (PDN) connection;

receiving an indication of a type of connectivity selected by a network element indicating the selection of: local internet protocol access (LIPA) connectivity; selected internet protocol traffic offload (SIPTO) connectivity; and remote connectivity.

2. The method of claim 1 wherein receiving an indication of a type of connectivity available in a telecommunication cell comprises receiving an indication of a type of connectivity available in any one of:

a GERAN/UTRAN femto cell;

a GERAN/UTRAN macro cell;

a GERAN/UTRAN CSG cell;

an E-UTRAN femto cell;

an E-UTRAN macro cell;

an E-UTRAN CSG cell;

WLAN cells; and

non-3GPP cells.

3. The method of claim 1 further comprising providing the indication to upper layers.

4. The method of claim 1, wherein receiving the indication of a type of connectivity comprises receiving a message, which is at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT REJECT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a PDN CONNECTIVITY

REJECT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

5. The method of claim 1, wherein receiving the indication of a type of connectivity includes receiving a Supported Connectivity Type information element in at least one of an ACTIVATE PDP CONTEXT ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT REJECT message; a PDN CONNECTIVITY ACCEPT message; a PDN CONNECTIVITY REJECT message; or a ROUTING AREA UPDATE REJECT message.

6. The method of claim 1, further comprising connecting to a connection for which the default EPS bearer context, or default PDP context, was activated with an APN authorized to use LIPA.

7. The method of claim 1, wherein receiving the indication of a type of connectivity occurs during one or more of: initial attach to the network; handover of the UE from a macro cell to a femto cell or a closed subscriber group (CSG) cell; idle mobility of the UE from a macro cell to a femto cell or a CSG cell; handover of the UE from a 3GPP macro cell, a 3GPP femto cell, or a 3GPP CSG cell to a non-3GPP access; or handover of the UE from a non-3GPP access to a 3GPP femto cell or a 3GPP CSG cell.

8. The method of claim 1, wherein receiving the indication of a type of connectivity available comprises receiving a Supported Connectivity Type indication broadcast over a radio channel.

9. The method of claim 1, wherein the indication is a connectivity type information element having one (1) octet length.

10. The method of claim 1, wherein one of a GPRS Support Node (SGSN) and a mobility management entity (MME) select the connectivity type.

11. A method for use in a network element comprising:

providing an indication of a type of connectivity selected for a UE in a telecommunication cell;

wherein the indication of the type of connectivity selected for the UE indicates one or more of: local internet protocol access (LIPA) connectivity or selected internet protocol traffic offload (SIPTO) connectivity.

12. The method of claim 11 wherein providing an indication of a type of connectivity selected for the UE in a telecommunication cell comprises providing an indication of a type of connectivity selected in any one of:

a GERAN/UTRAN femto cell;

a GERAN/UTRAN macrocell;

a GERAN/UTRAN CSG cell;

an E-UTRAN femto cell;

an E-UTRAN macrocell;

an E-UTRAN CSG cell;

WLAN cells; or

non-3GPP cells.

13. The method of claim 11 or 12 wherein providing an indication of a type of connectivity selected is performed in response to receiving a request for connectivity.

14. The method of any preceding claim wherein providing an indication of a type of connectivity selected comprises providing:

an indication of a supported type of connectivity available in a telecommunication cell;

an indication of a type of connectivity other than that which was requested; and an indication that a requested type of connectivity is not available in a telecommunication cell.

15. The method of any preceding claim, wherein providing the indication of a type of connectivity selected comprises providing at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT

message; an ACTIVATE PDP CONTEXT REJECT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

16. The method of any one of claims 11 to 15 wherein the network element is one of a Mobility Management Entity (MME) or a Serving GPRS Support Node (SGSN).

17. The method of any one of the preceding claims wherein providing the indication of a type of connectivity provided occurs in the non-access stratum (NAS) functional layer.

18. A method for use in a user equipment (UE) comprising:

receiving an indication of a type of connectivity selected for the UE in a telecommunication cell;

wherein the indication of the type of connectivity selected for the UE indicates one or more or of: local internet protocol access (LIPA) connectivity or selected internet protocol traffic offload (SIPTO) connectivity.

19. The method of claim 18 wherein receiving an indication of a type of connectivity selected for the UE in a telecommunication cell comprises receiving an indication of a type of connectivity selected in any one of:

a GERAN/UTRAN femtocell;

a GERAN/UTRAN macrocell;

a GERAN/UTRAN CSG cell;

an E-UTRAN femto cell;

an E-UTRAN macrocell;

an E-UTRAN CSG cell;

WLAN cells; or

non-3GPP cells.

20. The method of claim 18 or 19 wherein upon receipt of an indication that LIPA connectivity has been selected for the UE the UE provides an indication to the upper layers that the connectivity is provided by LIPA.

21. The method of claim 18 or 19 wherein upon receipt of an indication that SIPTO connectivity has been selected for the UE provides an indication to the upper layers that the connectivity is provided by SIPTO.

22. The method of any one of claims 18 to 21 wherein receiving the indication of a type of connectivity selected for the UE occurs in the non-access stratum (NAS) functional layer.

23. The method of any one of claims 18 to 22, wherein receiving the indication of the type of connectivity selected for the UE occurs upon receiving a message, which is at least one of an ACTIVATE DEFAULT EPS BEARER CONTEXT REQUEST message; a TRACKING AREA UPDATE ACCEPT message; an ACTIVATE PDP CONTEXT ACCEPT message; a PDN CONNECTIVITY ACCEPT message; a ROUTING AREA UPDATE ACCEPT message; or a ROUTING AREA UPDATE REJECT message.

24. The method of any one of claims 18 to 22, wherein receiving the indication of a type of connectivity selected for the UE comprises receiving a message including a Connectivity Type information element.

25. The method of any one of claims 18 to 24 wherein receiving an indication of a type of connectivity selected occurs in response to sending a request for connectivity.