CLAIMS

WHAT IS CLAIMED IS:

1. A method for wireless communications, comprising:

assigning a unique IP mobility anchor identifier to each IP mobility anchor associated with a mobile device;

negotiating an IP flow reservation for each IP mobility anchor identifier;

signaling a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor; and

sending packets through each negotiated IP flow and associated IP tunnel to each IP mobility anchor.

2. The method of claim 1, wherein negotiating an IP flow reservation includes generating a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

3. The method of claim 2, wherein negotiating an IP flow reservation further includes creating an attribute identifying structure of the reservation label, and communicating the attribute to a radio access network (RAN).

4. The method of claim 3, wherein negotiating an IP flow reservation further includes negotiating an IP flow reservation with the RAN using the reservation label and wherein for each negotiated IP flow RAN creates at least one bearer connection for each IP mobility anchor.

5. The method of claim 4, wherein signaling a request further includes signaling to an access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

6. The method of claim 5, wherein signaling a request includes sending to the access gateway a name of the particular IP mobility anchor and wherein access

gateway associates the name of the particular IP mobility anchor with the IP flow identified by the IP mobility anchor identifier.

7. The method of claim 6, wherein packets sent through one or more negotiated IP flow are being mapped by the access gateway into an IP tunnels based on the association of the IP flow with the particular IP mobility anchor.

8. The method of claim 5, wherein the access gateway includes one of a PDSN or HRPD serving gateway.

9. The method of claim 1, wherein the IP mobility anchor includes one of a mobile IP home agent and a proxy mobile IP local mobility anchor.

10. The method of claim 1, wherein an IP tunnel includes a bidirectional Proxy Mobile IP (PMIP) tunnel.

11. The method of claim 1, wherein negotiating an IP flow reservation includes negotiating a Quality of Service (QoS) treatment for each IP flow.

12. The method of claim 1, further comprising creating an IP mobility anchor context for each IP mobility anchor identifier, the context comprising an IP mobility anchor identifier and an IP mobility anchor context type.

13. The method of claim 12, wherein the IP mobility anchor context type includes one or more of IPv4, IPv6 and IPv4/IPv6.

14. The method of claim 11, wherein the access gateway uses the IP mobility anchor identifier to correlate the associated IP mobility anchor context to the IP flow for that IP mobility anchor.

15. A mobile device, comprising:

a processor and a communications component coupled to the processor,

the processor being configured to

assign a unique IP mobility anchor identifier to each IP mobility anchor associated with the mobile device;

negotiate an IP flow reservation for each IP mobility anchor identifier;

signal using the communications component a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor; and

send using the communications component packets through each negotiated IP flow and associated IP tunnel to each IP mobility anchor.

16. The mobile device of claim 15, wherein the processor is further configured to generate a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

17. The mobile device of claim 16, wherein the processor is further configured to negotiate an IP flow reservation with a radio access network (RAN) using the reservation label and wherein for each negotiated IP flow the RAN creates at least one bearer connection to an access gateway.

18. The mobile device of claim 17, wherein the processor is further configured to signal to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

19. The mobile device of claim 18, wherein packets sent through one or more negotiated IP flow are being mapped by the access gateway into an IP tunnel based on the association of the IP flow with the particular IP mobility anchor.

20. The mobile device of claim 19, wherein the processor is further configured to create an IP mobility anchor context for each IP mobility anchor identifier, the context comprising an IP mobility anchor identifier and an IP mobility anchor context type.

21. The mobile device of claim 20, wherein the access gateway uses the IP mobility anchor identifier to correlate the associated IP mobility anchor context to the IP flow for that IP mobility anchor.

22. At least one processor configured to provide wireless communications, the at least one processor comprising:

a first module for assigning a unique IP mobility anchor identifier to each IP mobility anchor associated with a mobile device;

a second module for negotiating an IP flow reservation for each IP mobility anchor identifier;

a third module for signaling a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor; and

a fourth module for sending packets through each negotiated IP flow and associated IP tunnel to each IP mobility anchor.

23. The at least one processor of claim 22, wherein the second module is further for generating a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

24. The at least one processor of claim 23, wherein the second module is further for negotiating an IP flow reservation with a radio access network (RAN) using the reservation label and wherein for each negotiated IP flow the RAN creates at least one bearer connection to an access gateway.

25. The at least one processor of claim 24, wherein the third module is further for signaling to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

26. The at least one processor of claim 25, wherein packets sent through one or more negotiated IP flow are being mapped by the access gateway into an IP tunnel based on the association of the IP flow with the particular IP mobility anchor.

27. A computer program product, comprising:

a computer-readable medium comprising:

a first set of codes for causing a computer to assign a unique IP mobility anchor identifier to each IP mobility anchor associated with a mobile device;

a second set of codes for causing the computer to negotiate an IP flow reservation for each IP mobility anchor identifier;

a third set of codes for causing the computer to signal a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor; and

a fourth set of codes for causing the computer to send packets through each negotiated IP flow and associated IP tunnel to each IP mobility anchor.

28. The computer program product of claim 27, wherein the second set of codes further includes codes for causing the computer to generate a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

29. The computer program product of claim 28, wherein the second set of codes further includes codes for causing a computer to negotiate an IP flow reservation with a radio access network (RAN) using the reservation label and wherein for each negotiated IP flow RAN creates at least one bearer connection to an access gateway.

30. The computer program product of claim 29, wherein the third set of codes further includes codes for causing a computer to signal to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

31. The computer program product of claim 30, wherein packets sent through each negotiated IP flow are being mapped by the access gateway into one or more IP tunnels based on the association of the IP flow with the particular IP mobility anchor.

32. An apparatus, comprising:

means for assigning a unique IP mobility anchor identifier to each IP mobility anchor associated with a mobile device;

means for negotiating an IP flow reservation for each IP mobility anchor identifier;

means for signaling a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor; and

means for sending packets through each negotiated IP flow and associated IP tunnel to each IP mobility anchor.

33. The apparatus of claim 32, wherein the means for negotiating an IP flow reservation includes means for generating a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

34. The apparatus of claim 33, wherein the means for negotiating an IP flow reservation further includes means for negotiating an IP flow reservation with a radio access network (RAN) using the reservation label and wherein for each negotiated IP flow RAN creates at least one bearer connection to an access gateway.

35. The apparatus of claim 34, wherein the means for signaling a request further includes means for signaling to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

36. The apparatus of claim 35, wherein the packets sent through each negotiated IP flow are being mapped by the access gateway into one or more IP tunnels based on the association of the IP flow with the particular IP mobility anchor.

CLAIMS

1. A method for wireless communications, comprising:

assigning a unique IP mobility anchor identifier to each of a plurality of IP mobility anchors associated with a mobile device for providing a plurality of associated services, the IP mobility anchors selected from the group consisting of Home Agents (HAs) and Local Mobility Anchors (LMAs);

negotiating an IP flow reservation for each service between the mobile device and the respective IP mobility anchor for each IP mobility anchor identifier;

signaling a request from the mobile device to associate an IP flow of each negotiated IP flow reservation with an IP tunnel to a particular IP mobility anchor; and

multiplexing multiple simultaneous connections from the mobile device to the plurality of IP mobility anchors in the mobile IP network by sending packets for each service through each respective IP flow and associated IP tunnel to each of the plurality of IP mobility anchors.

2. The method of claim 1, wherein negotiating an IP flow reservation includes generating a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

3. The method of claim 2, wherein negotiating an IP flow reservation further includes creating an attribute identifying structure of the reservation label, and communicating the attribute to a radio access network (RAN).

4. The method of claim **3**, wherein negotiating an IP flow reservation further includes negotiating an IP flow reservation with the RAN using the reservation label and wherein for each negotiated IP flow RAN creates at least one bearer connection for each IP mobility anchor.

5. The method of claim **4**, wherein signaling a request further includes signaling to an access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

6. The method of claim **5**, wherein signaling a request includes sending to the access gateway a name of the particular IP mobility anchor and wherein access gateway associates the name of the particular IP mobility anchor with the IP flow identified by the IP mobility anchor identifier.

7. The method of claim **6**, wherein packets sent through one or more negotiated IP flow are being mapped by the access gateway into an IP tunnels based on the association of the IP flow with the particular IP mobility anchor.

8. The method of claim **5**, wherein the access gateway includes one of a PDSN or HRPD serving gateway.

9. The method of claim **1**, wherein the IP mobility anchor includes one of a mobile IP home agent and a proxy mobile IP local mobility anchor.

10. The method of claim **1**, wherein an IP tunnel includes a bidirectional Proxy Mobile IP (PMIP) tunnel.

11. The method of claim **1**, wherein negotiating an IP flow reservation includes negotiating a Quality of Service (QoS) treatment for each IP flow.

12. The method of claim **11**, wherein the access gateway uses the IP mobility anchor identifier to correlate the associated IP mobility anchor context to the IP flow for that IP mobility anchor.

13. The method of claim **1**, further comprising creating an IP mobility anchor context for each IP mobility anchor identifier, the context comprising an IP mobility anchor identifier and an IP mobility anchor context type.

14. The method of claim **13**, wherein the IP mobility anchor context type includes one or more of IPv4, IPv6 and IPv4/IPv6.

15. A mobile device, comprising:

a processor and a communications component coupled to the processor, the processor being configured to:

assign a unique IP mobility anchor identifier to each of a plurality of IP mobility anchors associated with the mobile device for providing a plurality of associated services, the IP mobility anchors selected from the group consisting of Home Agents (HAs) and Local Mobility Anchors (LMAs);

negotiate an IP flow reservation for each service between the mobile device and the respective IP mobility anchor for each IP mobility anchor identifier;

signal using the communications component a request to associate an IP flow of each negotiated IP flow reservation with an IP tunnel to a particular IP mobility anchor; and

multiplex multiple simultaneous connections from the mobile device to the plurality of IP mobility anchors in a mobile IP network by sending the communications component packets for each service through each respective IP flow and associated IP tunnel to each of the plurality of IP mobility anchors.

16. The mobile device of claim **15**, wherein the processor is further configured to generate a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

17. The mobile device of claim **16**, wherein the processor is further configured to negotiate an IP flow reservation with a radio access network (RAN) using the reservation label and wherein for each negotiated IP flow the RAN creates at least one bearer connection to an access gateway.

18. The mobile device of claim **17**, wherein the processor is further configured to signal to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

19. The mobile device of claim **18**, wherein packets sent through one or more negotiated IP flow are being mapped by the access gateway into an IP tunnel based on the association of the IP flow with the particular IP mobility anchor.

20. The mobile device of claim **19**, wherein the processor is further configured to create an IP mobility anchor context for each IP mobility anchor identifier, the context comprising an IP mobility anchor identifier and an IP mobility anchor context type.

21. The mobile device of claim **20**, wherein the access gateway uses the IP mobility anchor identifier to correlate the associated IP mobility anchor context to the IP flow for that IP mobility anchor.

22. A non-transitory computer-readable medium having stored thereon processor-executable instructions configured to cause a processor of a mobile device to perform operations comprising:

assigning a unique IP mobility anchor identifier to each of a plurality of IP mobility anchors associated with the mobile device for providing a plurality of associated

services, the IP mobility anchors selected from the group consisting of Home Agents (HAs) and Local Mobility Anchors (LMAs);

negotiating an IP flow reservation for each service between the mobile device and the respective IP mobility anchor for each IP mobility anchor identifier;

signaling a request to associate an IP flow of each negotiated IP flow reservation with an IP tunnel to a particular IP mobility anchor; and

multiplexing multiple simultaneous connections from the mobile device to the plurality of IP mobility anchors in the mobile IP network by sending packets for each service through each respective IP flow and associated IP tunnel to each of the plurality of IP mobility anchors.

23. The non-transitory computer-readable medium of claim **22**, wherein the processor-executable instructions are further configured to cause the processor to perform operations causing the mobile device to generate a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

24. The non-transitory computer-readable medium of claim **23**, wherein the processor-executable instructions are further configured to cause the processor to perform operations causing the mobile device to negotiate an IP flow reservation with a radio access network (RAN) using the reservation label and wherein for each negotiated IP flow RAN creates at least one bearer connection to an access gateway.

25. The non-transitory computer-readable medium of claim **24**, wherein the processor-executable instructions are further configured to cause the processor to perform operations causing the mobile device to signal to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

26. The non-transitory computer-readable medium of claim **25**, wherein packets sent through each negotiated IP flow are being mapped by the access gateway into one or more IP tunnels based on the association of the IP flow with the particular IP mobility anchor.

27. An apparatus, comprising:

means for assigning a unique IP mobility anchor identifier to each of a plurality of IP mobility anchors associated with a mobile device for providing a plurality of associated services, the IP mobility anchors selected from the group consisting of Home Agents (HAs) and Local Mobility Anchors (LMAs);

means for negotiating an IP flow reservation for each service between the apparatus and the respective IP mobility anchor for each IP mobility anchor identifier;

means for signaling a request to associate an IP flow of each negotiated IP flow reservation with an IP tunnel to a particular IP mobility anchor; and

means for multiplexing multiple simultaneous connections from the mobile device to the plurality of IP mobility anchors in the mobile IP network by sending packets for each service through each respective IP flow and associated IP tunnel to each of the plurality of IP mobility anchors.

28. The apparatus of claim **27**, wherein the means for negotiating an IP flow reservation includes means for generating a reservation label for each IP flow, wherein a reservation label include at least an IP flow identifier and the IP mobility anchor identifier.

29. The apparatus of claim **28**, wherein the means for negotiating an IP flow reservation further includes means for negotiating an IP flow reservation with a radio access network

(RAN) using the reservation label and wherein for each negotiated IP flow RAN creates at least one bearer connection to an access gateway.

30. The apparatus of claim **29**, wherein the means for signaling a request further includes means for signaling to the access gateway a request to associate each negotiated IP flow with an IP tunnel to a particular IP mobility anchor.

31. The apparatus of claim **30**, wherein the packets sent through each negotiated IP flow are being mapped by the access gateway into one or more IP tunnels based on the association of the IP flow with the particular IP mobility anchor.