CLAIMS

What is claimed is:

1. A data transmission method, comprising:

sending, by a multi-link transmit end, a request message to a multi-link receive end; and

receiving, by the multi-link transmit end, a response message from the multi-link receive end, wherein

the request message and the response message are used for negotiating to set up a traffic identifier-to-link (TID-to-link) mapping relationship; and

wherein the request message comprises mapping information, the mapping information comprises a TID bitmap field and N link identifier bitmap fields, N is a positive integer, wherein a bit whose value is 1 in the TID bitmap field indicates that a TID identified by a position of the bit whose value is 1 in the TID bitmap field corresponds to one of the N link identifier bitmap fields, a bit whose value is 1 in a link identifier bitmap field indicates that a TID corresponding to the link identifier bitmap field is mapping to a link identified by a position of the bit whose value is 1 in the link identifier bitmap field.

2. The method according to claim 1, wherein the method further comprises:

determining, by the multi-link transmit end, buffer status report (BSR) signaling, wherein the BSR signaling indicates the multi-link receive end to schedule a station of the multi-link transmit end over one or more links; and

sending, by the multi-link transmit end, the BSR signaling to the multi-link receive end over the one or more links.

3. The method according to claim 1 or 2, wherein the BSR signaling comprises one or more of a queue size all field of a transmission link, a scaling factor field of the transmission link, a TID field, a queue size field, and a first scaling factor field; and

the queue size all field of the transmission link indicates a size of a first buffered service on a link for sending the BSR signaling, the scaling factor field of the transmission link indicates a unit of the size of the first buffered service, the TID field indicates a reported first service type, the queue size field indicates a size of a second buffered service corresponding to the first service type, and the first scaling factor field indicates a unit of the size of the second buffered service.

4. The method according to claim 1 or 2, wherein the BSR signaling comprises one or more

of a first TID field, a first queue size field, a second TID field, a second queue size field, and a second scaling factor field; and

the first TID field indicates a reported second service type, the first queue size field indicates a size of a third buffered service corresponding to the second service type, the second TID field indicates a reported third service type, the second queue size field indicates a size of a fourth buffered service corresponding to the third service type, and the second scaling factor field indicates a unit of the size of the third buffered service and a unit of the size of the fourth buffered service.

5. The method according to claim 1 or 2, wherein the BSR signaling comprises one or more of a third TID field, a third queue size field, a third scaling factor field, a fourth TID field, a fourth queue size field, and a scaling factor difference field; and

the third TID field indicates a reported fourth service type, the third queue size field indicates a size of a fifth buffered service corresponding to the fourth service type, the fourth TID field indicates a reported fifth service type, the fourth queue size field indicates a size of a sixth buffered service corresponding to the fifth service type, the third scaling factor field indicates a unit of the size of the fifth buffered service, and the third scaling factor field and the scaling factor difference field indicate a unit of the size of the sixth buffered service.

6. The method according to claim 1, wherein a length of the link identifier bitmap field is fixed.

7. The method according to claim 1, wherein a quantity of bits that are set to 1 in the TID bitmap field is N.

8. The method according to claim 1, wherein the response message comprises control information, and the control information indicates that a TID-to-Link mapping is accepted.

9. The method according to claim 1, wherein the response message comprises control information, and the control information indicates that a TID-to-Link mapping is rejected.

10. The method according to claim 1, wherein the response message comprises control information, and the control information indicates that a TID-to-Link mapping is suggested.

11. The method according to any one of claims 2 to 10, wherein before the sending, by the multi-link transmit end, the BSR signaling to the multi-link receive end over the one or more links, the method further comprises:

receiving, by the multi-link transmit end, trigger information from the multi-link receive end,

wherein the trigger information is used for triggering the multi-link transmit end to send the BSR signaling over the one or more links.

12. The method according to any one of claims 2 to 11, wherein the sending, by the multi-link transmit end, the BSR signaling to the multi-link receive end over the one or more links comprises:

sending, by the multi-link transmit end, a quality of service (QoS) data packet to the multi-link receive end over the one or more links, wherein a media access control (MAC) header of the QoS data packet carries the BSR signaling.

13. The method according to claim 12, wherein a QoS control field of the QoS data packet further comprises buffer status indication information, and the buffer status indication information indicates a size of a buffered service of the multi-link transmit end.

14. The method according to claim 13, wherein the buffer status indication information comprises one bit of a TID field in the QoS control field and eight bits of a queue size field in the QoS control field.

15. A data transmission method, comprising:

receiving, by a multi-link receive end, a request message from a multi-link transmit end; and

sending, by the multi-link receive end, a response message to the multi-link transmit end, wherein

the request message and the response message are used for negotiating to set up the traffic identifier-to-link TID-to-link mapping relationship; and

wherein the request message comprises mapping information, the mapping information comprises a TID bitmap field and N link identifier bitmap fields, N is a positive integer, wherein a bit whose value is 1 in the TID bitmap field indicates that a TID identified by a position of the bit whose value is 1 in the TID bitmap field corresponds to one of the N link identifier bitmap fields, a bit whose value is 1 in a link identifier bitmap field indicates that a TID corresponding to the link identifier bitmap field is mapping to a link identified by a position of the bit whose value is 1 in the link identifier bitmap field.

16. The method according to claim 15, wherein the method further comprises:

receiving, by the multi-link receive end, buffer status report (BSR) signaling from the multi-link transmit end over one or more links; and

scheduling, based on the BSR signaling by the multi-link receive end, a station of the multi-

link transmit end over the one or more links.

17. The method according to claim 16, wherein the BSR signaling comprises one or more of a queue size all field of a transmission link, a scaling factor field of the transmission link, a TID field, a queue size field, and a first scaling factor field; and

the queue size all field of the transmission link indicates a size of a first buffered service on a link for sending the BSR signaling, the scaling factor field of the transmission link indicates a unit of the size of the first buffered service, the TID field indicates a reported first service type, the queue size field indicates a size of a second buffered service corresponding to the first service type, and the first scaling factor field indicates a unit of the size of the second buffered service.

18. The method according to claim 16, wherein the BSR signaling comprises one or more of a first TID field, a first queue size field, a second TID field, a second queue size field, and a second scaling factor field; and

the first TID field indicates a reported second service type, the first queue size field indicates a size of a third buffered service corresponding to the second service type, the second TID field indicates a reported third service type, the second queue size field indicates a size of a fourth buffered service corresponding to the third service type, and the second scaling factor field indicates a unit of the size of the third buffered service and a unit of the size of the fourth buffered service.

19. The method according to claim 16, wherein the BSR signaling comprises one or more of a third TID field, a third queue size field, a third scaling factor field, a fourth TID field, a fourth queue size field, and a scaling factor difference field; and

the third TID field indicates a reported fourth service type, the third queue size field indicates a size of a fifth buffered service corresponding to the fourth service type, the fourth TID field indicates a reported fifth service type, the fourth queue size field indicates a size of a sixth buffered service corresponding to the fifth service type, the third scaling factor field indicates a unit of the size of the fifth buffered service, and the third scaling factor field and the scaling factor difference field indicate a unit of the size of the sixth buffered service.

20. The method according to claim 15No , wherein a length of the link identifier bitmap field is fixed.

21. The method according to claim 20, wherein a quantity of bits that are set to 1 in the TID bitmap field is N.

22. The method according to claim 15, wherein the response message comprises control information, and the control information indicates that a TID-to-Link mapping is accepted.

23. The method according to claim 15, wherein the response message comprises control information, and the control information indicates that a TID-to-Link mapping is rejected.

24. The method according to claim 23, wherein the response message comprises control information, and the control information indicates that a TID-to-Link mapping is suggested.

25. The method according to claim 17 to 24, wherein before the receiving, by the multi-link receive end, BSR signaling from the multi-link transmit end over one or more links, the method further comprises:

sending, by the multi-link receive end, trigger information to the multi-link transmit end, wherein the trigger information is used for triggering the multi-link transmit end to send the BSR signaling over the one or more links.

26. The method according to any one of claims 17 to 25, wherein the receiving, by the multi-link receive end, BSR signaling from the multi-link transmit end over one or more links comprises:

receiving, by the multi-link receive end, a quality of service (QoS) data packet from the multi-link transmit end over the one or more links, wherein a media access control (MAC) header of the QoS data packet carries the BSR signaling.

27. The method according to claim 2627, wherein a QoS control field of the QoS data packet further comprises buffer status indication information, and the buffer status indication information indicates a size of a buffered service of the transmit end of the first multi-link device.

28. The method according to claim 27, wherein the buffer status indication information comprises one bit of a TID field in the QoS control field and eight bits of a queue size field in the QoS control field.

29. A data transmission apparatus, configured to implement the method according to any one of claims 1 to 14.

30. A data transmission apparatus, configured to implement the method according to any one of claims 15 to 28.

31. A communication apparatus, comprising:

a memory, configured to store computer instructions; and

a processor, configured to execute the computer instructions stored in the memory, to enable the communication apparatus to perform the method according to any one of claims 1 to 14, or

enable the communication apparatus to perform the method according to any one of claims 15 to 28.

32. A computer-readable storage medium, configured to store a computer program, wherein the computer program comprises instructions used for implementing the method according to any one of claims 1 to 14, or comprises instructions used for implementing the method according to any one of claims 15 to 28.

33. A computer program product, comprising computer program code, wherein when the computer program code is run on a computer, the computer implements the method according to any one of claims 1 to 14, or the computer implements the method according to any one of claims 15 to 28.