

CLAIMS

What is claimed is:

1. A communication method between multi-link devices, applied to a station STA multi-link device, wherein the STA multi-link device comprises a plurality of STAs, the plurality of STAs share an association identifier AID, the method comprises:

receiving, by the STA multi-link device, downlink traffic indication information sent by a first access point AP multi-link device, wherein the downlink traffic indication information comprises information used to indicate whether the STA multi-link device that share an AID has a downlink unicast traffic;

determining, by the STA multi-link device based on the downlink traffic indication information, whether the plurality of STAs are to receive the downlink unicast traffic.

2. The method according to claim 1, wherein the downlink traffic indication information is carried in a traffic indication map TIM element field in a management frame, the TIM element field comprises a partial virtual bitmap field, the partial virtual bitmap field comprises a bit that corresponding to the AID, the bit is used to indicate whether the STA multi-link device has a downlink unicast traffic.

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

sending, by a second STA, a media access control MAC frame to the first AP multi-link device, wherein the MAC frame comprises a frame control field, the frame control field comprises power management information which is configured to indicate whether a second STA affiliated with the STA multi-link device MLD is in a power-saving mode or a non-power-saving mode, the setting of the power-saving mode or the non-power-saving mode of the second STA is independent of the setting of the other second STAs of the multi-link STA.

4. The method according to claim 2, the management frame further comprises a multi-link identifier bitmap field, the multi-link identifier bitmap field is used to indicate one or more links of the STA multi-link device to receive the downlink unicast traffic.

5. The method according to claim 4, wherein one bit in the multi-link identifier bitmap field correspond to one link; and

when a value of the bit is 1, indicating the link corresponding to the bit to receive the downlink unicast traffic, or when a value of the bit is 0, indicating the link corresponding to the bit not to receive the downlink unicast traffic.

6. The method according to any one of claims 2 to 5, wherein the management frame comprises

a beacon frame or a TIM frame.

7. The method according to any one of claims 1 to 6, wherein the method further comprises:
receiving, by a second STA, the downlink traffic indication information on a primary link or a secondary link.

8. A communication method between multi-link devices, wherein the method comprises:
sending, by a first access point AP multi-link device, downlink traffic indication information to a station STA multi-link device, wherein the STA multi-link device comprises a plurality of STAs, the plurality of STAs share an association identifier AID, wherein the downlink traffic indication information comprises information used to indicate whether the STA multi-link device that share an AID has a downlink unicast traffic;

sending, by the first AP multi-link device, the downlink unicast traffic.

9. The method according to claim 8, wherein the downlink traffic indication information is carried in a traffic indication map TIM element field in a management frame, the TIM element field comprises a partial virtual bitmap field, the partial virtual bitmap field comprises a bit that corresponding to the AID, the bit is used to indicate whether the STA multi-link device has a downlink unicast traffic.

10. The method according to claim 8 or 9, wherein the method further comprises:
receiving, by the first AP multi-link device, a media access control MAC frame, wherein the MAC frame comprises a frame control field, the frame control field comprises power management information which is configured to indicate whether a second STA affiliated with the first STA multi-link device MLD that sent the MAC frame is in a power-saving mode or a non-power-saving mode, the setting of the power-saving mode or the non-power-saving mode of the second STA is independent of the setting of the other second STAs of the multi-link STA.

11. The method according to claim 9, the management frame further comprises a multi-link identifier bitmap field, the multi-link identifier bitmap field is used to indicate one or more links of the STA multi-link device to receive the downlink unicast traffic.

12. The method according to claim 11, wherein the multi-link identifier bitmap field comprises one or more bits, one bit in the one or more bits correspond to one link; and

when a value of the bit is 1, indicating the link corresponding to the bit to receive the downlink unicast traffic, or when a value of the bit is 0, indicating the link corresponding to the bit not to receive the downlink unicast traffic.

13. The method according to any one of claims 9 to 12, wherein the management frame comprises a beacon frame or a TIM frame.

14. The method according to any one of claims 8 to 13, wherein the method further comprises:

sending, by the first AP multi-link device, the downlink traffic indication information on a primary link or a secondary link.

15. A communications apparatus, applied to a station STA multi-link device, wherein the STA multi-link device comprises a plurality of STAs, the plurality of STAs share an association identifier AID, the apparatus configured to:

a transceiver unit, configured to receive downlink traffic indication information sent by a first access point AP multi-link device, wherein the downlink traffic indication information comprises information used to indicate whether the STA multi-link device that share an AID has a downlink unicast traffic;

a processing unit, configured to determine whether the plurality of STAs to receive the downlink unicast traffic based on the downlink traffic indication information.

16. The apparatus according to claim 15, wherein the downlink traffic indication information is carried in a traffic indication map TIM element field in a management frame, the TIM element field comprises a partial virtual bitmap field, the partial virtual bitmap field comprises a bit that corresponding to the AID, the bit is used to indicate whether the STA multi-link device has a downlink unicast traffic.

17. The apparatus according to claim 15 or 16, wherein the apparatus further configured to:

the transceiver unit configured to send a media access control MAC frame to the first AP multi-link device, wherein the MAC frame comprises a frame control field, the frame control field comprises power management information which is configured to indicate whether a second STA affiliated with the first STA multi-link device MLD is in a power-saving mode or a non-power-saving mode, the setting of the power-saving mode or the non-power-saving mode of the second STA is independent of the setting of the other second STAs of the multi-link STA.

18. The apparatus according to claim 16, the management frame further comprises a multi-link identifier bitmap field, the multi-link identifier bitmap field is used to indicate one or more links of the STA multi-link device to receive the downlink unicast traffic.

19. The apparatus according to claim 18, wherein one bit in the multi-link identifier bitmap field correspond to one link; and

when a value of the bit is 1, indicating the link corresponding to the bit to receive the downlink unicast traffic, or when a value of the bit is 0, indicating the link corresponding to the bit not to receive the downlink unicast traffic.

20. The apparatus according to any one of claims 16 to 19, wherein the management frame comprises a beacon frame or a TIM frame.

21. The apparatus according to any one of claims 15 to 20, wherein the apparatus further further

configured to:

the transceiver unit configured to receive the downlink traffic indication information on a primary link or a secondary link.

22. A communications apparatus, wherein the apparatus configured to:

a transceiver unit, configured to send downlink traffic indication information to a station STA multi-link device, wherein the STA multi-link device comprises a plurality of STAs, the plurality of STAs share an association identifier AID, wherein the downlink traffic indication information comprises information used to indicate whether the STA multi-link device has a downlink unicast traffic;

the transceiver unit, further configured to send the downlink unicast traffic.

23. The apparatus according to claim 22, wherein the downlink traffic indication information is carried in a traffic indication map TIM element field in a management frame, the TIM element field comprises a partial virtual bitmap field, the partial virtual bitmap field comprises a bit that corresponding to the AID, the bit is used to indicate whether the STA multi-link device has a downlink unicast traffic.

24. The apparatus according to claim 22 or 23, wherein the apparatus further configured to:

the transceiver unit further configured to receive a media access control MAC frame, wherein the MAC frame comprises a frame control field, the frame control field comprises power management information which is configured to indicate whether a second STA affiliated with the STA multi-link device MLD that sent the MAC frame is in a power-saving mode or a non-power-saving mode, the setting of the power-saving mode or the non-power-saving mode of the second STA is independent of the setting of the other second STAs of the multi-link STA.

25. The apparatus according to claim 23, the management frame further comprises a multi-link identifier bitmap field, the multi-link identifier bitmap field is used to indicate one or more links of the STA multi-link device to receive the downlink unicast traffic.

26. The apparatus according to claim 25, wherein the multi-link identifier bitmap field comprises one or more bits, one bit in the one or more bits correspond to one link; and

when a value of the bit is 1, indicating the link corresponding to the bit to receive the downlink unicast traffic, or when a value of the bit is 0, indicating the link corresponding to the bit not to receive the downlink unicast traffic.

27. The apparatus according to any one of claims 23 to 26, wherein the management frame comprises a beacon frame or a TIM frame.

28. The apparatus according to any one of claims 22 to 27, wherein the apparatus further configured to:

the transceiver unit further configured to send the downlink traffic indication information on a primary link or a secondary link.

29. A chip, wherein the chip comprises a processor and an interface circuit, and the processor is configured to communicate with another apparatus by using the interface circuit, to implement the communication method between multi-link devices according to any one of claims 1 to 14.

30. A computer-readable storage medium, wherein the computer-readable storage medium has computer program code, and when the computer program code is run on a processor, the processor is enabled to perform the communication method between multi-link devices according to any one of claims 1 to 14.

31. A computer program product, wherein when the computer program product is run on a computer, the computer is enabled to perform the communication method between multi-link devices according to any one of claims 1 to 14.