

CLAIMS

1. A communication method, applied to an access point multi-link device, comprising:
generating a first physical layer protocol data unit (PPDU), wherein the first PPDU carries
first indication information, and the first indication information indicates that waking up of a first
5 access point in a doze state is allowed, or the first indication information indicates that waking up
of a first access point in a doze state is not allowed; and
sending the first PPDU.

2. The method according to claim 1, wherein
the first indication information comprises a wake-up enable field, and the wake-up enable
10 field indicates that waking up of the first access point in the doze state is allowed, or that waking
up of the first access point in the doze state is not allowed; or

the first indication information comprises a power management mode field, and the power
management mode field indicates that waking up of the first access point in the doze state is
allowed, or that waking up of the first access point in the doze state is not allowed.

3. The method according to claim 2, wherein the power management mode field further
indicates that the first access point is in an active mode, and/or the power management mode field
further indicates that the first access point is in a sleep mode.

4. The method according to any one of claims 1 to 3, wherein the first indication information
indicates that waking up of the first access point in the doze state is allowed; and

20 after the access point multi-link device sends the first PPDU through the first access point,
the method further comprises:

receiving a second PPDU sent by a non-access point multi-link device, wherein the second
PPDU carries second indication information, and the second indication information is used to wake
up a first access point corresponding to one or more links.

5. The method according to claim 4, wherein the second PPDU comprises an access point
assistance request control field, and the access point assistance request control field carries the
second indication information.

6. The method according to claim 5, wherein the access point assistance request control field
further carries third indication information, and the third indication information indicates that the
30 access point assistance request control field is used to wake up a first access point in a specified
access point multi-link device.

7. The method according to any one of claims 4 to 6, wherein the method further comprises:
sending a third PPDU to the non-access point multi-link device, wherein the third PPDU
indicates a woken-up first access point; or

sending a fourth PPDU to the non-access point multi-link device on a woken-up link, wherein the fourth PPDU indicates that a first access point corresponding to the link is woken up.

8. The method according to any one of claims 4 to 6, wherein the method further comprises:

5 sending a fifth PPDU, wherein the fifth PPDU comprises a wakeup delay field, and the wakeup delay field indicates a delay for the first access point to switch to an awake state.

9. The method according to claim 8, wherein the fifth PPDU further comprises a power save operation support field, and the power save operation support field indicates whether the wakeup delay field is present.

10. The method according to any one of claims 4 to 9, wherein the first access point that is in
10 a power save mode is woken up by one or more non-access point multi-link devices; and the method further comprises:

if fourth indication information sent by the one or more non-access point multi-link devices is received, and the fourth indication information is set to 0, switching, by the first access point of the access point multi-link device, from the awake state to the doze state; or

15 if a channel is in an idle state, switching, by the first access point of the access point multi-link device, from the awake state to the doze state.

11. The method according to claim 10, wherein the fourth indication information is information indicated by a more data field.

12. The method according to any one of claims 1 to 11, wherein the method further comprises:
20 sending a reduced neighbor report element, wherein a target beacon transmission time information set field that corresponds to the first access point and that is in the reduced neighbor report element carries a multi-link device parameters field, and a target beacon transmission time information length is set to a first length value, so that a legacy station ignores the first access point; or

25 sending a reduced neighbor report element, wherein a target beacon transmission time information field type that corresponds to the first access point and that is in the reduced neighbor report element is set to a first type value, so that a legacy station ignores the first access point.

13. The method according to any one of claims 1 to 12, wherein the method further comprises:

30 sending a sixth PPDU, wherein the sixth PPDU carries fifth indication information, and the fifth indication information indicates that transmission is allowed out of a service period, or that transmission is not allowed out of a service period; and/or

the first PPDU comprises a power management mode field, and the power management mode field further indicates a periodic power save mode.

14. A communication method, applied to a non-access point multi-link device, comprising:

35 receiving a first physical layer protocol data unit (PPDU), wherein the first PPDU carries first

indication information, and the first indication information indicates that waking up of a first access point in a doze state is allowed, or the first indication information indicates that waking up of a first access point in a doze state is not allowed; and

determining whether to wake up the first access point.

5 15. The method according to claim 14, wherein the first indication information comprises a wake-up enable field, and the wake-up enable field indicates that waking up of the first access point in the doze state is allowed, or that waking up of the first access point in the doze state is not allowed; or

10 the first indication information comprises a power management mode field, and the power management mode field indicates that waking up of the first access point in the doze state is allowed, or that waking up of the first access point in the doze state is not allowed.

16. The method according to claim 15, wherein the power management mode field further indicates the first access point to switch to an awake mode, and/or the power management mode field further indicates the first access point to switch to a doze mode.

15 17. The method according to any one of claims 14 to 16, wherein the first indication information indicates that waking up of the first access point in the doze state is allowed; and

after the determining whether to wake up the first access point, the method further comprises:

20 sending a second PPDU, wherein the second PPDU carries second indication information, and the second indication information is used to wake up a first access point corresponding to one or more links.

18. The method according to claim 17, wherein the second PPDU comprises an access point assistance request control field, and the access point assistance request control field carries the second indication information.

25 19. The method according to claim 18, wherein the access point assistance request control field further carries third indication information, and the third indication information indicates that the access point assistance request control field is used to wake up a first access point in a specified access point multi-link device.

20. The method according to any one of claims 17 to 19, wherein the method further comprises:

30 receiving a third PPDU, wherein the third PPDU indicates a woken-up first access point; or
receiving a fourth PPDU on a woken-up link, wherein the fourth PPDU indicates that a first access point corresponding to the link is woken up.

21. The method according to any one of claims 17 to 19, wherein the method further comprises:

35 receiving a fifth PPDU, wherein the fifth PPDU comprises a wakeup delay field, and the

wakeup delay field indicates a delay for the first access point to switch to an awake state.

22. The method according to claim 21, wherein the fifth PPDU further comprises a power save operation support field, and the power save operation support field indicates whether the wakeup delay field is present.

5 23. The method according to any one of claims 17 to 22, wherein the first access point that is in a power save mode is woken up by one or more non-access point multi-link devices; and the method further comprises:

 sending fourth indication information, wherein the fourth indication information is set to 0, and indicates the first access point to switch from the awake state to the doze state.

10 24. The method according to claim 23, wherein the fourth indication information is information indicated by a more data field.

 25. The method according to any one of claims 14 to 24, wherein the method further comprises:

 receiving a reduced neighbor report element, wherein a target beacon transmission time
15 information set field that corresponds to the first access point and that is in the reduced neighbor report element carries a multi-link device parameters field, and a target beacon transmission time information length is set to a first length value, so that a legacy station ignores a first link; or

 receiving a reduced neighbor report element, wherein a target beacon transmission time
information set field that corresponds to the first access point and that is in the reduced neighbor
20 report element carries a target beacon transmission time information field type, and the target beacon transmission time information field type is set to a first type value, so that a legacy station ignores a first link.

 26. The method according to any one of claims 14 to 25, wherein the method further comprises:

25 receiving a sixth PPDU, wherein the sixth PPDU carries fifth indication information, and the fifth indication information indicates that transmission is allowed out of a service period, or that transmission is not allowed out of a service period; and/or

 the first PPDU comprises a power management mode field, and the power management mode field further indicates a periodic power save mode.

30 27. A communication apparatus, wherein the communication apparatus is an access point multi-link device or applied to an access point multi-link device, comprising at least one processor, wherein the at least one processor is coupled to a memory;

 the memory is configured to store a program or instructions; and

 the at least one processor is configured to execute the program or the instructions stored in
35 the memory, so that the apparatus performs the method according to any one of claims 1 to 13.

28. A communication apparatus, wherein the communication apparatus is a non-access point multi-link device or applied to a non-access point multi-link device, comprising at least one processor, wherein the at least one processor is coupled to a memory;

the memory is configured to store a program or instructions; and

5 the at least one processor is configured to execute the program or the instructions stored in the memory, so that the apparatus performs the method according to any one of claims 14 to 26.

29. A computer-readable storage medium, comprising a program or instructions, wherein when the program or instructions are executed, the method according to any one of claims 1 to 26 is performed.

10 30. A computer program product, comprising a computer program, wherein when the computer program is run on a computer, the method according to any one of claims 1 to 26 is performed.

31. A communication system, comprising an access point multi-link device configured to perform the method according to any one of claims 1 to 13, and a non-access point multi-link
15 device configured to perform the method according to any one of claims 14 to 26.

32. A chip system, wherein the chip system comprises:

at least one processor and a memory, wherein the at least one processor is coupled to the memory, the memory is configured to store a program or instructions, and when the program or the instructions are executed by the at least one processor, the method according to any one of
20 claims 1 to 26 is implemented.