

request frame (probe request frame), and the AP may reply with a probe response frame (probe response frame) after receiving the probe request frame. The probe response frame may carry related information of the AP, so that the STA probes the AP and obtains various parameter information of the AP.

- 5 **[0006]** However, in the foregoing communication process, how to allow the AP to accurately learn information required by the STA needs to be urgently resolved.

SUMMARY

- [0007]** This application provides a multi-link communication probe request method and apparatus, to allow a non-AP MLD to clearly indicate information required by the non-AP MLD, and to allow an AP MLD to accurately feed back the information required by the non-AP MLD. This improves information exchange efficiency.

[0007a] In an aspect, the present disclosure refers to a multi-link communication probe request method, wherein the method comprises:

- generating, by a non-access point multi-link device (non-AP MLD), a probe request frame, wherein the probe request frame comprises a first multi-link element, the first multi-link element is used to request link information of an access point multi-link device (AP MLD), the first multi-link element comprises at least a first multi-link control field indicating a type of the first multi-link element is of probing type and at least one per-STA profile field,

- wherein the at least one per-STA profile field comprises at least a link identifier subfield set to a value of a link identifier of a first link, to indicate that the probe request frame corresponds to the first link and a complete information subfield with a value of 0 or 1, wherein the value 1 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back complete information of the first link and value 0 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back partial information of the first link; and

sending, by the non-access point multi-link device (non-AP MLD), the probe request frame to the AP MLD.

[0007b] In an aspect, the present disclosure refers to a multi-link communication probe request method, wherein the method comprises:

receiving, from a non-access point multi-link device (non-AP MLD), a probe request frame, wherein the probe request frame comprises a first multi-link element, the first multi-link element is used to request link information of an access point multi-link device (AP MLD), the first multi-link element comprises at least a first multi-link control field indicating a type of the first multi-link element is of probing type and at least one per-STA profile field,

wherein the at least one per-STA profile field comprises at least a link identifier subfield set to a value of a link identifier of a first link, to indicate that the probe request frame corresponds to the first link and a complete information subfield with a value of 0 or 1, wherein the value 1 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back complete information of the first link and value 0 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back partial information of the first link; and

generating, a probe response frame based on the probe request frame, and sending the probe response frame to the non-AP MLD.

[0007c] In an aspect, the present disclosure refers to a computer-readable storage medium, wherein the computer-readable storage medium is configured to store a computer program, and when the computer program is executed, the method according to any one of the above aspects is performed.

[0007d] In an aspect, the present disclosure refers to a communication apparatus, comprising at least one processor and at least a memory, wherein

the at least one memory is configured to store instructions; and the at least one processor executes the instructions, causing the communications apparatus to perform the method according to any one of the above aspects.

[0007e] In an aspect, the present disclosure refers to a communication apparatus, comprising a logic circuit and an interface, wherein the logic circuit is coupled to the interface; and the interface is configured to input to-be-processed data, the logic circuit processes the to-be-processed data by using the method according to any one of the above aspects, to obtain processed data, and the interface is configured to output the processed data.

[0007f] In an aspect, the present disclosure refers to a multi-link communication system, wherein

the multi-link communication system comprises a non-access point multi-link device (non-AP MLD) and an access point multi-link device (AP MLD);

the non-AP MLD performs the method according to the above aspects; and

the AP MLD performs the method according to the above aspects.

5 **[0008]** According to a first example, an embodiment of this application provides a multi-link communication probe request method. The method includes:

[0009] A non-access point multi-link device (non-AP multi-link device, non-AP MLD) generates a probe request frame (probe request frame), where the probe request frame includes a first multi-link element (multi-link element, MLE), the first multi-link element is used to request
10 link information of an access point multi-link device (AP multi-link device, AP MLD), the first multi-link element includes a first link information field, the first link information field includes a first field, the first field indicates that the non-AP MLD requests the AP MLD to feed back complete information or partial information of a first link, and the first link information field corresponds to the first link; and the non-AP MLD sends the probe request frame to the AP MLD.

15 **[0010]** According to a second example, an embodiment of this application provides a multi-link communication probe request method. The method includes:

[0011] An access point multi-link device (AP MLD) receives a probe request frame, where the probe request frame includes a first multi-link element, the first multi-link element is used to request link information of the AP MLD, the first multi-link element includes a first link
20 information field, the first link information field includes a first field, the first field indicates that a non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back complete information or partial information of a first link, and the first link information field corresponds to

the first link; and the AP MLD generates a probe response frame based on the probe request frame, and sends the probe response frame to the non-AP MLD.

[0012] The first link information field corresponds to the first link because the first link information field further includes a link identifier (link identifier, link ID) field, and the link identifier field may indicate an identifier of the first link. The first link information field may also be referred to as a first per-STA profile (per-STA profile) field. In other words, a link information field may also be referred to as a per-STA profile field. In addition, the first field may also be referred to as a first subfield or the like. A specific name of each field is not limited in this example of this application.

[0013] In this example of this application, the first field indicates that the non-AP MLD requests the AP MLD to feed back the complete information or the partial information of the first link, so that the non-AP MLD can clearly indicate which one of the complete information and the partial information of the link is fed back by the AP MLD, and the AP MLD accurately learns of the link information that needs to be fed back by the AP MLD. This improves information exchange efficiency.

[0014] In any possible implementation of the first example or the second example, the first field is a complete information (complete information) field in the first link information field.

[0015] Generally, when a value of the complete information field is a fixed value, the link information field may indicate that the non-AP MLD carries the complete information of the first link. However, in this example of this application, the first multi-link element is used to request the link information of the AP MLD. In this case, signaling overheads can be reduced by reusing the complete information field.

[0016] In any possible implementation of the first example or the second example, the first multi-link element further includes a first multi-link control (multi-link control) field. The first multi-link control field includes first type information. The first type information indicates a type of the first multi-link element.

[0017] In this example of this application, the first type information may explicitly indicate the type of the first multi-link element, so that the AP MLD clearly learns of a function of the first multi-link element. This further improves information exchange efficiency.

[0018] In any possible implementation of the first example or the second example, when a value of the first field is a first value, the first field indicates that the non-AP MLD requests the AP MLD

to feed back the complete information of the first link; or when a value of the first field is a second value, the first field indicates that the non-AP MLD requests the AP MLD to feed back the partial information of the first link.

[0019] In this example of this application, the specific value of the first field may be set to further determine which one of the complete information and the partial information of the first link is fed back by the AP MLD.

[0020] In any possible implementation of the first example or the second example, the probe request frame further includes a second multi-link element. The second multi-link element indicates link information of the non-AP MLD.

[0021] In this example of this application, the probe request frame may include only one type of multi-link element, for example, the first multi-link element. Alternatively, the probe request frame may include two types of multi-link elements, for example, the first multi-link element and the second multi-link element. The multi-link elements of distinguished types may be more flexibly selected by the non-AP MLD.

[0022] In any possible implementation of the first example or the second example, the second multi-link element includes a second link information field. The second link information field corresponds to a second link. The second link information field includes a second field. The second field indicates that the non-AP MLD carries complete information or partial information of the second link. The second link information field corresponds to the second link.

[0023] In any possible implementation of the first example or the second example, the second field is a complete information field in the second link information field.

[0024] In any possible implementation of the first example or the second example, the second multi-link element further includes a second multi-link control (multi-link control) field. The second multi-link control field includes second type information. The second type information indicates a type of the second multi-link element.

[0025] In any possible implementation of the first example or the second example, the first field is a request complete information (request complete information) field in the first link information field.

[0026] According to a third example, an embodiment of this application provides a multi-link communication probe request method. The method includes:

[0027] A non-access point multi-link device (non-AP MLD) generates a probe request frame,

where the probe request frame includes at least one multi-link element, the multi-link element includes a multi-link control (multi-link control) field, the multi-link control field includes a third field, when a value of the third field is a third value, the multi-link element is used to request link information of an access point multi-link device (AP MLD), or when a value of the third field is a fourth value, the multi-link element indicates link information of the non-AP MLD; and the non-AP MLD sends the probe request frame to the AP MLD.

[0028] According to a fourth example, an embodiment of this application provides a multi-link communication probe request method. The method includes:

[0029] An access point multi-link device (AP MLD) receives a probe request frame, where the probe request frame includes at least one multi-link element, each multi-link element includes a multi-link control field, the multi-link control field includes a third field, when a value of the third field is a third value, the multi-link element is used to request link information of the AP MLD, or when a value of the third field is a fourth value, the multi-link element indicates link information of a non-access point multi-link device (non-AP MLD); and the AP MLD generates a probe response frame based on the probe request frame, and sends the probe response frame to the non-AP MLD.

[0030] In this example of this application, the multi-link element is used to request the link information of the AP MLD. In other words, a type of the multi-link element is an MLD probing (probing) type, or is referred to as an MLD probe request (MLD probe request) type. The multi-link element indicates the link information of the non-AP MLD. In other words, a type of the multi-link element is a basic (basic) type. This description is also applicable in the following.

[0031] In any possible implementation of the third example or the fourth example, the multi-link element further includes a link information field. The link information field includes a fourth field. When the multi-link element is used to request the link information of the AP MLD, the fourth field indicates that the non-AP MLD requests the AP MLD to feed back complete information or partial information of a first link, where the first link corresponds to the link information field; or when the multi-link element is used to indicate the link information of the non-AP MLD, the fourth field indicates that the non-AP MLD carries complete information or partial information of a first link.

[0032] In any possible implementation of the third example or the fourth example, when a value of the fourth field is a first value, the fourth field indicates that the non-AP MLD requests the AP

MLD to feed back the complete information of the first link; or when a value of the fourth field is a second value, the fourth field indicates that the non-AP MLD requests the AP MLD to feed back the partial information of the first link.

5 [0033] In any possible implementation of the third example or the fourth example, the fourth field is a complete information field in the link information field.

[0034] It may be understood that for beneficial effects of the third example or the fourth example, refer to the foregoing descriptions of the first example or the second example. Details are not described herein again.

10 [0035] According to a fifth example, an embodiment of this application provides a multi-link communication probe request method. The method includes:

[0036] A non-access point multi-link device (non-AP MLD) generates a probe request frame, where the probe request frame includes a multi-link element, the multi-link element includes a link information field, if the link information field does not include a fifth field, the link information field indicates that the non-AP MLD requests an access point multi-link device (AP MLD) to feed back complete information of a first link, and the link information field corresponds to the first link; and the non-AP MLD sends the probe request frame to the AP MLD.

[0037] According to a sixth example, an embodiment of this application provides a multi-link communication probe request method. The method includes:

20 [0038] An access point multi-link device (AP MLD) receives a probe request frame, where the probe request frame includes a multi-link element, the multi-link element includes a link information field, if the link information field does not include a fifth field, the link information field indicates that a non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back complete information of a first link, and the link information field corresponds to the first link; and the AP MLD generates a probe response frame based on the probe request frame, and sends the probe response frame to the non-AP MLD.

25 [0039] Generally, if the link information field does not include the fifth field, the link information field may indicate that the non-AP MLD requests the AP MLD to feed back the complete information of the first link, or may indicate that one or more information elements in the link information field are the same as one or more information elements on a transmitting link.

30 In this case, the AP MLD may not accurately learn of which one of the complete information and partial information of the first link needs to be fed back.

- [0040] However, in this example of this application, the link information field indicates that the non-AP MLD requests the AP MLD to feed back the complete information of the first link. In other words, the link information field may not indicate that an information element in the link information field is the same as an information element on a transmitting link.
- 5 [0041] Therefore, the AP MLD may accurately learn that the complete information of the first link is fed back. This improves information exchange efficiency.
- [0042] In any possible implementation of the fifth example or the sixth example, the multi-link element further includes a third field. A value of the third field is a third value. The multi-link element is used to request link information of the AP MLD.
- 10 [0043] In any possible implementation of the fifth example or the sixth example, the fifth field includes a request element (request element) field and an extended request element (extended request element) field.
- [0044] According to a seventh example, an embodiment of this application provides a multi-link communication probe request method. The method includes:
- 15 [0045] A non-access point multi-link device (non-AP MLD) generates a probe request frame, where the probe request frame includes a link information field, the link information field includes a sixth field, the sixth field indicates whether the non-AP MLD requests link information of a first link, and the link information field corresponds to the first link; and the non-AP MLD sends the probe request frame to an access point multi-link device (AP MLD).
- 20 [0046] According to an eighth example, an embodiment of this application provides a multi-link communication probe request method. The method includes:
- [0047] An access point multi-link device (AP MLD) receives a probe request frame, where the probe request frame includes a link information field, the link information field includes a sixth field, the sixth field indicates whether a non-access point multi-link device (non-AP MLD)
- 25 requests link information of a first link, and the link information field corresponds to the first link; and the AP MLD generates a probe response frame based on the probe request frame, and sends the probe response frame to the non-AP MLD.
- [0048] In this example of this application, the sixth field is added to the link information field, so that the non-AP MLD can clearly indicate whether the AP MLD probes a link (for example, the first link). In
- 30 other words, the non-AP MLD may flexibly select a link as a probe request object, to avoid that the AP MLD probes the link (for example, the first link) again. This avoids resource

waste.

[0049] In any possible implementation of the seventh example or the eighth example, when a value of the sixth field is a fifth value, the sixth field indicates that the non-AP MLD requests the link information of the first link; or when a value of the sixth field is a sixth value, the sixth field indicates that the non-AP MLD does not request the link information of the first link.

[0050] In other words, when the value of the sixth field is the fifth value, the sixth field indicates that the non-AP MLD requests the AP MLD to feed back the link information of the first link; or when the value of the sixth field is the sixth value, the sixth field indicates that the non-AP MLD requests the AP MLD not to feed back the link information of the first link.

[0051] According to a ninth example, an embodiment of this application provides a communication apparatus, configured to perform the method in any one of the first example, the third example, the fifth example, the seventh example, or the possible implementations thereof. The communication apparatus includes corresponding units, configured to perform the method in any one of the first example, the third example, the fifth example, the seventh example, or the possible implementations thereof.

[0052] For example, the communication apparatus may include a transceiver unit and a processing unit. The communication apparatus may be the non-AP MLD in the first example, the third example, the fifth example, or the seventh example, or a chip in the non-AP MLD, for example, a wireless fidelity (wireless fidelity, Wi-Fi) chip.

[0053] According to a tenth example, an embodiment of this application provides a communication apparatus, configured to perform the method in any one of the second example, the fourth example, the sixth example, the eighth example, or the possible implementations thereof. The communication apparatus includes corresponding units, configured to perform the method in any one of the second example, the fourth example, the sixth example, the eighth example, or the possible implementations thereof.

[0054] For example, the communication apparatus may include a transceiver unit and a processing unit. The communication apparatus may be the AP MLD in the second example, the fourth example, the sixth example, or the eighth example, or a chip in the AP MLD, for example, a Wi-Fi chip.

[0055] According to an eleventh example, an embodiment of this application provides a communication apparatus. The communication apparatus includes a processor, configured to

perform the method in any one of the first example, the third example, the fifth example, the seventh example, or the possible implementations thereof.

[0056] In a process of performing the foregoing methods, a process of sending the information and a process of receiving the information in the foregoing methods may be understood as a process of outputting the information by the processor and a process of receiving the input information by the processor. When outputting the information, the processor outputs the information to a transceiver, so that the transceiver transmits the information. After the information is output by the processor, other processing may further need to be performed on the information before the information arrives at the transceiver. Similarly, when the processor receives the input information, the transceiver receives the information and inputs the information to the processor. Still further, after the transceiver receives the information, other processing may need to be performed on the information before the information is input to the processor.

[0057] Based on the foregoing principle, for example, the sending the probe request frame mentioned in the foregoing method may be understood as outputting, by the processor, the probe request frame. For another example, the receiving the probe response frame may be understood as receiving, by the processor, the input probe response frame.

[0058] Unless otherwise specified, operations such as transmission, sending, and receiving related to the processor may be more generally understood as operations such as output, receiving, and input of the processor if the operations do not conflict with actual functions or internal logic of the operations in related descriptions.

[0059] In an implementation process, the processor may be a processor specially configured to perform these methods, or a processor, for example, a general-purpose processor, configured to execute computer instructions in a memory to perform these methods. The memory may be a non-transitory (non-transitory) memory, for example, a read-only memory (Read-Only Memory, ROM). The memory and the processor may be integrated into a same chip, or may be separately disposed on different chips. A type of the memory and a manner of disposing the memory and the processor are not limited in this example of this application.

[0060] In a possible implementation, the memory is located outside the communication apparatus.

[0061] In a possible implementation, the memory is located inside the communication apparatus.

- [0062] In this example of this application, the processor and the memory may alternatively be integrated into one component. In other words, the processor and the memory may alternatively be integrated together.
- 5 [0063] In a possible implementation, the communication apparatus further includes a transceiver. The transceiver is configured to receive a signal and/or send a signal. For example, the transceiver may be configured to send a probe request frame. For another example, the transceiver may be further configured to receive a probe response frame and the like.
- [0064] In this example of this application, the communication apparatus may be the non-AP MLD in the first example, the third example, the fifth example, or the seventh example.
- 10 [0065] According to a twelfth example, an embodiment of this application provides a communication apparatus. The communication apparatus includes a processor, configured to execute a program stored in a memory. When the program is executed, the communication apparatus is enabled to perform the method in any one of the second example, the fourth example, the sixth example, the eighth example, or the possible implementations thereof.
- 15 [0066] In a possible implementation, the memory is located outside the communication apparatus.
- [0067] In a possible implementation, the memory is located inside the communication apparatus.
- [0068] In this example of this application, the processor and the memory may alternatively be integrated into one component. In other words, the processor and the memory may alternatively be integrated together.
- 20 [0069] In a possible implementation, the communication apparatus further includes a transceiver. The transceiver is configured to receive a signal and/or send a signal. For example, the transceiver may be configured to receive a probe request frame. For another example, the transceiver may be further configured to send a probe response frame and the like.
- [0070] In this example of this application, the communication apparatus may be the AP MLD in the second example, the fourth example, the sixth example, or the eighth example.
- 25 [0071] According to a thirteenth example, an embodiment of this application provides a communication apparatus. The communication apparatus includes a logic circuit and an interface. The logic circuit is coupled to the interface. The logic circuit is configured to generate a probe request frame. The interface is configured to output the probe request frame.

[0072] In this example of this application, the communication apparatus may be configured to perform any possible implementation of the first example, the third example, the fifth example, or the seventh example. Details are not described herein again. For specific descriptions of the probe request frame and/or a probe response frame, refer to the first example, the third example, the fifth example, the seventh example, or the like. Details are not described
5 herein again.

[0073] According to a fourteenth example, an embodiment of this application provides a communication apparatus. The communication apparatus includes a logic circuit and an interface. The logic circuit is coupled to the interface. The interface is configured to input a probe request frame. The logic circuit is configured to generate a probe response frame based on the probe request frame. The interface is further configured to output the probe response
10 frame.

[0074] In this example of this application, the communication apparatus may be configured to perform any possible implementation of the second example, the fourth example, the sixth example, or the eighth example. Details are not described herein again. For specific descriptions of the probe request frame and/or the probe response frame, refer to the second example, the fourth example, the sixth example, the eighth example, or the like. Details are not
15 described herein again.

[0075] According to a fifteenth example, an embodiment of this application provides a computer-readable storage medium. The computer-readable storage medium is configured to store a computer program. When the computer program is run on a computer, the method in any one of the first example or the possible implementations of the first example, the method in any one of the third example or the possible implementations of the third example, the method in any one of the fifth example or the possible implementations of the fifth example, or the method in any
20 one of the seventh example or the possible implementations of the seventh example is performed.

[0076] According to a sixteenth example, an embodiment of this application provides a computer-readable storage medium. The computer-readable storage medium is configured to store a computer program. When the computer program is run on a computer, the method in any one of the second example or the possible implementations of the second example, the method in any one of the fourth example or the possible implementations of the fourth
25 example, the method in any one of the sixth example or the possible implementations of the sixth example, or the method in any one of the eighth example or the possible implementations of the eighth example is performed.

[0077] According to a seventeenth example, an embodiment of this application provides a computer program product. The computer program product includes a computer program or

computer code. When the computer program product is run on a computer, the method in any one of the first example or the possible implementations of the first example, the method in any one of the third example or the possible implementations of the third example, the method in any one of the fifth example or the possible implementations of the fifth example, or the method in any one of the seventh example or the possible implementations of the seventh example is performed.

[0078] According to an eighteenth example, an embodiment of this application provides a computer program product. The computer program product includes a computer program or computer code. When the computer program product is run on a computer, the method in any one of the second example or the possible implementations of the second example, the method in any one of the fourth example or the possible implementations of the fourth example, the method in any one of the sixth example or the possible implementations of the sixth example, or the method in any one of the eighth example or the possible implementations of the eighth example is performed.

[0079] According to a nineteenth example, an embodiment of this application provides a computer program. When the computer program is run on a computer, the method in any one of the first example or the possible implementations of the first example, the method in any one of the third example or the possible implementations of the third example, the method in any one of the fifth example or the possible implementations of the fifth example, or the method in any one of the seventh example or the possible implementations of the seventh example is performed.

[0080] According to a twentieth example, an embodiment of this application provides a computer program. When the computer program is run on a computer, the method in any one of the second example or the possible implementations of the second example, the method in any one of the fourth example or the possible implementations of the fourth example, the method in any one of the sixth example or the possible implementations of the sixth example, or the method in any one of the eighth example or the possible implementations of the eighth example is performed.

[0081] According to a twenty-first example, an embodiment of this application provides a multi-link communication system. The multi-link communication system includes a non-AP MLD and an AP MLD.

[0082] In a possible implementation, the non-AP MLD is configured to perform the method in any one of the first example or the possible implementations of the first example. The AP MLD is configured to perform the method in any one of the second example or the possible implementations of the second example.

- [0083] In a possible implementation, the non-AP MLD is configured to perform the method in any one of the third example or the possible implementations of the third example. The AP MLD is configured to perform the method in any one of the fourth example or the possible implementations of the fourth example.
- 5 [0084] In a possible implementation, the non-AP MLD is configured to perform the method in any one of the fifth example or the possible implementations of the fifth example. The AP MLD is configured to perform the method in any one of the sixth example or the possible implementations of the sixth example.
- [0085] In a possible implementation, the non-AP MLD is configured to perform the method in
10 any one of the seventh example or the possible implementations of the seventh example. The AP MLD is configured to perform the method in any one of the eighth example or the possible implementations of the eighth example.

BRIEF DESCRIPTION OF DRAWINGS

- [0086] FIG. 1a is a schematic diagram of a structure of a probe request frame according to an
15 embodiment of this application;
- [0087] FIG. 1b is a schematic diagram of a structure of a request element according to an embodiment of this application;
- [0088] FIG. 1c is a schematic diagram of a structure of an extended request element according to an embodiment of this application;
- 20 [0089] FIG. 2a is a schematic diagram of a scenario of communication between a non-AP MLD and an AP MLD according to an embodiment of this application;
- [0090] FIG. 2b is a schematic diagram of an architecture of a wireless communication system according to an embodiment of this application;
- [0091] FIG. 3a to FIG. 3c each are a schematic diagram of structures of an AP MLD and a
25 non-AP MLD according to an embodiment of this application;
- [0092] FIG. 4a and FIG. 4b each are a schematic diagram of communication between an AP MLD and a non-AP MLD through a plurality of links in a wireless local area network according to an embodiment of this application;
- [0093] FIG. 4c to FIG. 4f each are a schematic diagram of a structure of a probe request frame

CLAIMS

What is claimed is:

1. A multi-link communication probe request method, wherein the method comprises:

generating, by a non-access point multi-link device (non-AP MLD), a probe request frame, wherein the probe request frame comprises a first multi-link element, the first multi-link element is used to request link information of an access point multi-link device (AP MLD), the first multi-link element comprises at least a first multi-link control field indicating a type of the first multi-link element is of probing type and at least one per-STA profile field,

wherein the at least one per-STA profile field comprises at least a link identifier subfield set to a value of a link identifier of a first link, to indicate that the probe request frame corresponds to the first link and a complete information subfield with a value of 0 or 1, wherein the value 1 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back complete information of the first link and value 0 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back partial information of the first link; and

sending, by the non-access point multi-link device (non-AP MLD), the probe request frame to the AP MLD.

2. A multi-link communication probe request method, wherein the method comprises:

receiving, from a non-access point multi-link device (non-AP MLD), a probe request frame, wherein the probe request frame comprises a first multi-link element, the first multi-link element is used to request link information of an access point multi-link device (AP MLD), the first multi-link element comprises at least a first multi-link control field indicating a type of the first multi-link element is of probing type and at least one per-STA profile field,

wherein the at least one per-STA profile field comprises at least a link identifier subfield set to a value of a link identifier of a first link, to indicate that the probe request frame corresponds to the first link and a complete information subfield with a value of 0 or 1, wherein the value 1 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back complete information of the first link and value 0 indicates that the non-access point multi-link device (non-AP MLD) requests the AP MLD to feed back partial information of the first link; and

generating, a probe response frame based on the probe request frame, and sending the probe response frame to the non-AP MLD.

3. The method according to any one of claims 1 to 2, wherein the probe request frame further comprises a second multi-link element, and the second multi-link element indicates link information

of the non-AP MLD.

4. The method according to claim 3, wherein the second multi-link element comprises a link information field, the link information field comprises a field, the field indicates that the non-AP MLD carries complete information or partial information of the second link, and the link information field corresponds to the second link.

5. The method according to claim 4, wherein the field is a complete information field in the link information field.

6. The method according to claim 3 to 6, wherein the second multi-link element further comprises a second multi-link control field, the second multi-link control field indicating a type of the second multi-link element.

7. A computer-readable storage medium, wherein the computer-readable storage medium is configured to store a computer program, and when the computer program is executed, the method according to any one of claims 1 to 6 is performed.

8. A communication apparatus, comprising at least one processor and at least a memory, wherein the at least one memory is configured to store instructions; and
the at least one processor executes the instructions, causing the communication apparatus to perform the method according to any one of claims 1 to 6.

9. A communication apparatus, comprising a logic circuit and an interface, wherein the logic circuit is coupled to the interface; and

the interface is configured to input to-be-processed data, the logic circuit processes the to-be-processed data by using the method according to any one of claims 1 to 6, to obtain processed data, and the interface is configured to output the processed data.

10. A multi-link communication system, wherein the multi-link communication system comprises a non-access point multi-link device (non-AP MLD) and an access point multi-link device (AP MLD);

the non-AP MLD performs the method according to claim 1, the method according to any one of claims 3 to 6; and

the AP MLD performs the method according to any one of claims 2 to 6