WHAT IS CLAIMED IS:

1. A communication method with multiple links, performed by an access point that supports a multi-link communication, and comprising:

determining a first message frame, wherein the first message frame comprises: information indicating that a fast initial link-setup (FILS) is performed with at least one link in the multiple links, wherein the information comprises: a reduced neighbor report element (RNRE) configured to identify relevant information of the multiple links supported by the access point that supports the multi-link communication; and

sending the first message frame.

2. The communication method according to claim 1, wherein the reduced neighbor report element (RNRE) comprises: a multi-link device identifier, configured to identify an address of the access point that supports the multi-link communication.

3. The communication method according to claim 2, wherein the reduced neighbor report element (RNRE) further comprises at least one of: a plurality of link identifiers respectively configured to identify the multiple links supported by the access point that supports the multi-link communication; or

a plurality of offset time identifiers, wherein each of the offset time identifiers is configured to identify a time offset of a target beacon transmission time (TBTT) beacon frame sent by the access point with a corresponding link.

4. The communication method according to claim 1 or 2, wherein the information further comprises: a FILS discovery information field,

wherein the FILS discovery information field may comprise an identification bit configured to indicate that the access point may support the multi-link communication.

5. A communication method with multiple links, performed by a station that supports the multiple links, and comprising:

receiving a first message frame, wherein the first message frame comprises: information indicating that a fast initial link-setup (FILS) is performed with at least one link in the multiple links, wherein the information comprises: a reduced neighbor report element (RNRE) configured to identify relevant information of the multiple links supported by an access point that supports a multi-link communication; and

performing a communication operation based on the first message frame.

6. The communication method according to claim 5, wherein the reduced neighbor report

element (RNRE) comprises at least one of: a multi-link device identifier, configured to identify an address of the access point that supports the multi-link communication; or

a plurality of link identifiers respectively configured to identify the multiple links supported by the access point that supports the multi-link communication; or

a plurality of offset time identifiers, wherein each of the offset time identifiers is configured to identify a time offset of a target beacon transmission time (TBTT) beacon frame sent by the access point with a corresponding link.

7. The communication method according to claim 5 or 6, wherein the information further comprises: a FILS discovery information field,

wherein the FILS discovery information field may comprise an identification bit configured to indicate the access point that supports the multi-link communication.

8. A communication apparatus with multiple links, applied to an access point that supports a multi-link communication, and comprising:

a processing module configured to determine a first message frame, wherein the first message frame comprises: information indicating that a fast initial link-setup (FILS) is performed with at least one link in the multiple links, wherein the information comprises: a reduced neighbor report element (RNRE) configured to identify relevant information of the multiple links supported by the access point that supports the multi-link communication; and

a transceiving module configured to send the first message frame.

9. A communication apparatus with multiple links, applied to a station that supports the multiple links, and comprising:

a transceiving module configured to receive a first message frame, wherein the first message frame comprises: information indicating that a fast initial link-setup (FILS) is performed with at least one link in the multiple links, wherein the information comprises: a reduced neighbor report element (RNRE) configured to identify relevant information of the multiple links supported by an access point that supports a multi-link communication; and

a processing module configured to perform a communication operation based on the first message frame.

10. An electronic device, comprising a memory, a processor, and a computer program stored in the memory and runnable on the processor, wherein the processor implements the method according to any one of claims 1 to 4 or according to any one of claims 5 to 7 when executing the computer program.