CLAIMS

What is claimed is:

1. A timing adjustment method, performed by a first relay device and comprising:

adjusting timing of a first link state based on first signaling, wherein

the first link state is a link state of the first relay device; and

the first signaling is provided by a parent node of the first relay device, or a first network-side device, wherein the parent node is a last-hop device of the first relay device;

wherein the first relay device is a first integrated access backhaul IAB node;

wherein the first link state is a link state in a first transmission mode, wherein

the first transmission mode is that mobile terminal transmission (MT TX) and distributed unit transmission (DU TX) of the first IAB node are aligned on time domain unit or work simultaneously, wherein the first signaling is used to indicate that MT TX follows timing of DU TX, or

wherein the first link state is a link state in a second transmission mode, wherein

the second transmission mode is that mobile terminal reception (MT RX) and distributed unit reception (DU RX) of the first IAB node are aligned on time domain unit or work simultaneously, wherein the first signaling comprises an offset gama of a TA.

2. The method according to claim 1, wherein the first link state comprises at least one of the following:

MT TX and/or DU TX of the first IAB node.

3. The method according to claim 1, wherein the first signaling comprises at least one of the following:

an offset $T_{additional}$ of a timing advance (TA), wherein the TA is obtained based on N_{TA} and $N_{TA,offset}$;

the N_{TA} and the $N_{TA,offset}$; and

T_{delta}, wherein the T_{delta} is used to adjust timing of DU TX of the first IAB node.

4. The method according to claim 1, wherein the first signaling comprises at least two first TAs, and at least one of the at least two first TAs is used to indicate a TA at a DU TX and/or MT TX occasion of the first IAB node.

5. The method according to claim 1, wherein the first link state comprises at least one of the following:

MT RX and/or DU RX of the first IAB node;

MT TX of the first IAB node, wherein the parent node of the first IAB node is a second IAB node, and the first signaling is signaling provided by the second IAB node to the first IAB node.

6. The method according to claim 1, wherein the first signaling further comprises:

an advance beta of DU TX with respect to DU RX.

7. The method according to claim 5, wherein the first signaling comprises at least two second TAs, and at least one of the at least two second TAs is used to indicate a TA of DU RX and/or MT RX of the first IAB node, or indicate a TA of MT TX of a child node of the first IAB node.

8. The method according to claim 7, wherein the at least two second TAs comprise a TA based on an independent configuration, a difference configuration, or a ratio configuration.

9. The method according to claim 7, wherein in a case that the first signaling is radio resource control (RRC) signaling, medium access control control element (MAC CE) signaling, or downlink control information (DCI) signaling, the RRC signaling, MAC CE signaling, or DCI signaling is used to indicate that the at least two first TAs or the at least two second TAs are the same or different.

10. The method according to claim 1, wherein the first signaling comprises first indication information, wherein the first indication information is used to indicate negative timing advance information supported by the first link state, and the first indication information comprises at least one of the following:

a negative value used to indicate a TA; and

an indication field used to indicate whether a TA field parameter is positive or negative.

11. The method according to claim 1, wherein the first signaling is RRC signaling, MAC CE signaling, DCI signaling, physical downlink control channel (PDCCH), or backhaul application protocol control protocol data unit (BAP control PDU).

12. The method according to claim 1, wherein in a case that the first signaling is RRC signaling or MAC CE signaling, the RRC signaling or MAC CE signaling is used for any one of the following:

indicating that MT TX follows timing of DU TX;

indicating a carrier or carrier set of DU TX followed by MT TX;

indicating a slot or slot set of DU TX followed by MT TX; and

indicating an orthogonal frequency division multiplexing (OFDM) symbol or symbol set of DU TX followed by MT TX.

13. The method according to claim 1, wherein in a case that the first signaling is RRC signaling or MAC CE signaling, the RRC signaling or MAC CE signaling is used for any one of the following:

indicating that DU RX follows timing of MT RX;

indicating a carrier or carrier set of MT RX followed by DU RX;

indicating a slot or slot set of MT RX followed by DU RX; and

indicating an orthogonal frequency division multiplexing (OFDM) symbol or symbol set of MT RX followed by DU RX.

14. The method according to claim 1, wherein in a case that the first signaling is DCI signaling, the DCI signaling carries an indication field or the DCI signaling is scrambled by using a first radio network temporary identifier (RNTI), and the DCI signaling is used to:

in a case that the first link state is a link state in the first transmission mode, indicate that MT TX follows timing of DU TX, or indicate a carrier or carrier set of DU TX followed by MT TX, or a slot or slot set of DU TX followed by MT TX, or an OFDM symbol or symbol set of DU TX followed by MT TX; or

in a case that the first link state is a link state in the second transmission mode, indicate that MT RX follows timing of DU RX, or indicate a carrier or carrier set of DU RX followed by MT RX, or a slot or slot set of DU RX followed by MT RX, or an OFDM symbol or symbol set of DU RX followed by MT RX, or

wherein in a case that the first signaling is DCI signaling, the DCI signaling comprises a PDCCH order, the PDCCH order is used to indicate a timing pattern of MT TX or indicate a timing pattern of MT RX, and the timing pattern of MT TX or the timing pattern of MT RX is used to:

in a case that the first link state is a link state in the first transmission mode, indicate that MT TX stops following or follows timing of carrier, slot, slot set, OFDM symbol, or symbol set of DU TX; or

in a case that the first link state is a link state in the second transmission mode, indicate that MT RX stops following or follows timing of carrier, slot, slot set, OFDM symbol, or symbol set of DU RX.

15. The method according to claim 14, further comprising:

transmitting response information to the first network-side device or the parent node of the first IAB node based on the PDCCH order.

16. The method according to claim 1, wherein in a case that the first signaling is DCI signaling, the DCI signaling is in a first DCI format and is used to:

in a case that the first link state is a link state in the first transmission mode, indicate that MT TX follows timing of DU TX or uses a timing rule of the first transmission mode; or

in a case that the first link state is a link state in the second transmission mode, indicate that MT RX follows timing of DU RX or uses a timing rule of the second transmission mode.

17. A terminal, comprising a memory, a processor, and a computer program stored in the memory and capable of running on the processor, wherein when the computer program is executed by the processor, the steps of the timing adjustment method according to any one of claims 1 to 16 are implemented.

18. A relay device, comprising a memory, a processor, and a computer program stored in the memory and capable of running on the processor, wherein when the computer program is executed by the processor, the steps of the timing adjustment method according to any one of claims 1 to 16 are implemented.