

Claims:

1. A data transmission method, comprising:

generating first indication information, wherein the first indication information is used for indicating a terminal device to send multiple pieces of uplink information on a first uplink channel of multiple uplink channels; and

sending a Radio Resource Control (RRC) signaling to the terminal device, wherein the RRC signaling comprises the first indication information;

sending second Downlink Control Information (DCI) to the terminal device, wherein the second DCI comprises an uplink (UL) grant message of uplink data; and

receiving the multiple pieces of uplink information sent by the terminal device;

wherein receiving the multiple pieces of uplink information sent by the terminal device comprises:

receiving the multiple pieces of uplink information sent by the terminal device on a Physical Uplink Control Channel (PUCCH) or on a Physical Uplink Shared Channel (PUSCH), wherein the multiple pieces of uplink information comprises the uplink data and at least one piece of the following information: acknowledgement/non-acknowledgement information corresponding to each downlink in the multiple downlink transmissions, and Channel State Information (CSI) corresponding to the each downlink in the multiple downlink transmissions.

2. A network device, comprising:

a generating unit, configured to generate first indication information, wherein the first indication information is used for indicating a terminal device to send multiple pieces of uplink information on a first uplink channel of multiple uplink channels; and

a transceiving unit, configured to send a Radio Resource Control (RRC) signaling to the terminal device, wherein the RRC signaling comprises the first indication information, send second Downlink Control Information (DCI) to the terminal device wherein the second DCI comprises an uplink (UL) grant message of uplink data, and receive the multiple pieces of uplink information sent by the terminal device;

wherein the transceiving unit (320) is specifically configured to:

receive the multiple pieces of uplink information sent by the terminal device on a Physical Uplink Control Channel (PUCCH) or on a Physical Uplink Shared Channel (PUSCH), wherein the multiple pieces of uplink information comprises the uplink data and at least one piece of the

following information: acknowledgement/non-acknowledgement information corresponding to each downlink in the multiple downlink transmissions, and Channel State Information (CSI) corresponding to the each downlink in the multiple downlink transmissions.

3. The network device according to claim 2, wherein the generating unit is specifically
5 configured to:

generate the first indication information according to at least one piece of the following information:

interaction capabilities between multiple Transmission Reception Points (TRPs)
corresponding to the multiple downlink transmissions, interaction capabilities between multiple
10 beams corresponding to the multiple downlink transmissions, interaction capabilities between
multiple cells to which the multiple TRPs belong, interaction capabilities between multiple cells
to which the multiple beams belong, report information of the terminal device, service
information of the multiple downlink transmissions, and network load information.

4. The network device according to claim 3, wherein the report information comprises at
15 least one piece of the following information:

capability information indicating whether the terminal device supports to send the multiple
pieces of uplink information on the multiple uplink channels, information about a
Multiple-Input Multiple-Output (MIMO) capability of the terminal device, level information of
the terminal device, and a Power Headroom Report (PHR) of the terminal device.

5. The network device according to any one of claims 2-4, wherein the transceiving unit is
20 specifically configured to:

send first Downlink Control Information (DCI) to the terminal device, wherein the first
DCI comprises the first indication information.

6. The network device according to claim 5, wherein the transceiving unit is further
25 specifically configured to:

send the first DCI to the terminal device on a control channel corresponding to each
downlink in the multiple downlink transmissions; or send the first DCI to the terminal device
on a control channel corresponding to a first downlink of the multiple downlink transmissions.

7. A terminal device, comprising:

30 a receiving unit, configured to receive first indication information sent by a network device,
wherein the first indication information is used for indicating a terminal device to send multiple

pieces of uplink information on a first uplink channel of multiple uplink channels; and

a sending unit, configured to send the multiple pieces of uplink information to the network device according to the first indication information;

wherein the receiving unit is specifically configured to: receive a Radio Resource Control, RRC, signaling sent by the network device, wherein the RRC signaling comprises the first indication information; receive second Downlink Control Information (DCI) sent by the network device, wherein the second DCI comprises an uplink (UL) grant message of uplink data;

wherein the sending unit is specifically configured to: send the multiple pieces of uplink information to the network device on a Physical Uplink Control Channel (PUCCH) or on a Physical Uplink Shared Channel (PUSCH), wherein the multiple pieces of uplink information comprises the uplink data and at least one piece of the following information: acknowledgement/non-acknowledgement information corresponding to each downlink in the multiple downlink transmissions, and Channel State Information (CSI) corresponding to the each downlink in the multiple downlink transmissions.

8. The terminal device according to claim 7, wherein the receiving unit is specifically configured to:

receive first Downlink Control Information (DCI) sent by the network device, wherein the first DCI comprises the first indication information.

9. The terminal device according to claim 7, wherein the receiving unit is specifically configured to:

receive first Downlink Control Information (DCI) sent by the network device, wherein the first DCI comprises the first indication information.

10. The terminal device according to claim 9, wherein the receiving unit is specifically configured to:

receive the first DCI sent by the network device on a control channel corresponding to any downlink of the multiple downlink transmissions; or receive the first DCI sent by the network device on a control channel corresponding to a first downlink of the multiple downlink transmissions.