CLAIMS

What is claimed is:

1. An information processing method, wherein the method is applied to a network access stratum device, a persistent connection is maintained between the network access stratum device and a terminal device, and a short connection is maintained between the network access stratum device and a message forwarding device; the method comprises:

receiving an uplink message sent by the terminal device;

encapsulating the uplink message and a session identifier of the persistent connection maintained between the network access stratum device and the terminal device into a target message corresponding to the short connection;

sending the target message to the message forwarding device, and receiving a downlink message corresponding to the target message and sent by the message forwarding device, wherein the downlink message comprises the session identifier;

determining a receiving device of the downlink message based on the session identifier; and

sending the downlink message to the determined receiving device that is the terminal device corresponding to the session identifier.

2. The method according to claim 1, wherein the method further comprises:

receiving a heartbeat request sent by the terminal device;

obtaining heartbeat response information corresponding to the heartbeat request; and

sending the heartbeat response information to the terminal device.

3. The method according to claim 1, wherein the method further comprises:

obtaining heartbeat information of the terminal device when a predetermined heartbeat reporting period is reached; and

sending the heartbeat information to the terminal device.

4. An information processing method, wherein the method is applied to a terminal device, and a persistent connection is maintained between the terminal device and a network access stratum device; the method comprises:

sending an uplink message to the network access stratum device, so the network access stratum device encapsulates the uplink message and a session identifier of the

persistent connection maintained between the terminal device and the network access stratum device into a target message corresponding to a short connection maintained between the network access stratum device and a message forwarding device, sends the target message to the message forwarding device, receives a downlink message sent by the message forwarding device, wherein the downlink message comprises the session identifier, and determines a receiving device of the downlink message based on the session identifier; and

receiving the downlink message corresponding to the uplink message and sent by the network access stratum device.

5. The method according to claim 4, wherein the method further comprises:

sending a heartbeat request to the network access stratum device; and

receiving heartbeat response information corresponding to the heartbeat request and sent by the network access stratum device.

6. The method according to claim 5, wherein sending a heartbeat request to the network access stratum device comprises:

sending a heartbeat request to the network access stratum device when a predetermined heartbeat detection period is reached.

7. An information processing method, wherein the method is applied to a message forwarding device, and a short connection is maintained between the message forwarding device and a network access stratum device; the method comprises:

receiving a target message sent by the network access stratum device, wherein the target message is obtained after an uplink message sent by a terminal device and a session identifier of a persistent connection established between the network access stratum device and the terminal device are encapsulated corresponding to the short connection; and

sending a downlink message corresponding to the target message to the network access stratum device, wherein the downlink message comprises the session identifier.

8. An information processing apparatus, wherein a persistent connection is maintained between the apparatus and a terminal device, and a short connection is maintained between the apparatus and a message forwarding device; the apparatus comprises:

a message receiving module, configured to receive an uplink message sent by the terminal device;

an encapsulation module, configured to encapsulate the uplink message and a session identifier of the persistent connection maintained between the network access stratum device and the terminal device into a target message corresponding to the short connection;

a transceiver module, configured to send the target message to the message forwarding device, and receive a downlink message corresponding to the target message and sent by the message forwarding device, wherein the downlink message comprises the session identifier;

a device determining module, configured to determine a receiving device of the downlink message based on the session identifier; and

a message sending module, configured to send the downlink message to the determined receiving device that is the terminal device corresponding to the session identifier.

9. The apparatus according to claim 8, wherein the apparatus further comprises:

a request receiving module, configured to receive a heartbeat request sent by the terminal device;

a response acquisition module, configured to obtain heartbeat response information corresponding to the heartbeat request; and

a response information sending module, configured to send the heartbeat response information to the terminal device.

10. The apparatus according to claim 8, wherein the apparatus further comprises:

a heartbeat acquisition module, configured to obtain heartbeat information of the terminal device when a predetermined heartbeat reporting period is reached; and

a heartbeat sending module, configured to send the heartbeat information to the terminal device.

11. An information processing apparatus, wherein a persistent connection is maintained between the apparatus and a network access stratum device; the apparatus comprises:

a message sending module, configured to send an uplink message to the network access stratum device, so the network access stratum device encapsulates the uplink message and a session identifier of the persistent connection maintained between the apparatus and the network access stratum device into a target message corresponding to a short connection maintained between the network access stratum device and a message forwarding device, sends the target message to the message forwarding

device, receives a downlink message sent by the message forwarding device, wherein the downlink message comprises the session identifier, and determines a receiving device of the downlink message based on the session identifier; and

a message receiving module, configured to receive the downlink message corresponding to the uplink message and sent by the network access stratum device.

12. The apparatus according to claim 11, wherein the apparatus further comprises:

a request sending module, configured to send a heartbeat request to the network access stratum device; and

a response information receiving module, configured to receive heartbeat response information corresponding to the heartbeat request and sent by the network access stratum device.

13. The apparatus according to claim 12, wherein the request sending module is configured to send a heartbeat request to the network access stratum device when a predetermined heartbeat detection period is reached.

14. An information processing apparatus, wherein a short connection is maintained between the apparatus and a network access stratum device; the apparatus comprises:

a message receiving module, configured to receive a target message sent by the network access stratum device, wherein the target message is obtained after an uplink message sent by a terminal device and a session identifier of a persistent connection established between the network access stratum device and the terminal device are encapsulated corresponding to the short connection; and

a message sending module, configured to send a downlink message corresponding to the target message to the network access stratum device, wherein the downlink message comprises the session identifier.

15. A network access stratum device, wherein a persistent connection is maintained between network access stratum device and a terminal device, and a short connection is maintained between network access stratum device and a message forwarding device; the network access stratum device comprises:

a processor; and

a memory, configured to store computer executable instructions, wherein when the executable instructions are being executed, the processor is enabled to:

receive an uplink message sent by the terminal device;

encapsulate the uplink message and a session identifier of the persistent connection maintained between the network access stratum device and the terminal device into a target message corresponding to the short connection;

send the target message to the message forwarding device, and receive a downlink message corresponding to the target message and sent by the message forwarding device, wherein the downlink message comprises the session identifier;

determine a receiving device of the downlink message based on the session identifier; and

send the downlink message to the determined receiving device that is the terminal device corresponding to the session identifier.

16. A terminal device, wherein a persistent connection is maintained between the terminal device and a network access stratum device; the terminal device comprises:

a processor; and

a memory, configured to store computer executable instructions, wherein when the executable instructions are being executed, the processor is enabled to:

send an uplink message to the network access stratum device, so the network access stratum device encapsulates the uplink message and a session identifier of the persistent connection maintained between the terminal device and the network access stratum device into a target message corresponding to a short connection maintained between the network access stratum device and a message forwarding device, sends the target message to the message forwarding device, receives a downlink message sent by the message forwarding device, wherein the downlink message comprises the session identifier, and determines a receiving device of the downlink message based on the session identifier; and

receive the downlink message corresponding to the uplink message and sent by the network access stratum device.

17. A message forwarding device, wherein a short connection is maintained between the message forwarding device and a network access stratum device; the message forwarding device comprises:

a processor; and

a memory, configured to store computer executable instructions, wherein when the executable instructions are being executed, the processor is enabled to:

receive a target message sent by the network access stratum device, wherein the target message is obtained after an uplink message sent by a terminal device and a

session identifier of a persistent connection established between the network access stratum device and the terminal device are encapsulated corresponding to the short connection; and

send a downlink message corresponding to the target message to the network access stratum device, wherein the downlink message comprises the session identifier.

18. An information processing system, wherein the system comprises a network access stratum device, a terminal device, and a message forwarding device, wherein:

a persistent connection is maintained between the network access stratum device and the terminal device, and a short connection is maintained between the network access stratum device and the message forwarding device;

the network access stratum device receives an uplink message sent by the terminal device;

the network access stratum device encapsulates the uplink message and a session identifier of the persistent connection maintained between the network access stratum device and the terminal device into a target message corresponding to the short connection, and sends the target message to the message forwarding device;

the network access stratum device receives a downlink message corresponding to the target message and sent by the message forwarding device, wherein the downlink message comprises the session identifier; and

the network access stratum device determines a receiving device of the downlink message based on the session identifier, and sends the downlink message to the determined receiving device that is the terminal device corresponding to the session identifier.

19. The system according to claim 18, wherein the network access stratum device is a standalone device.

20. The system according to claim 18, wherein the system comprises multiple network access stratum devices, the short connection is maintained between each network access stratum device and the message forwarding device, and a persistent connection is maintained between at least one network access stratum device and the terminal device.