

CLAIMS

What is claimed is:

1. A method for reporting state information, applied to a terminal and comprising:
transmitting state information of a handover procedure to a network device, wherein
the state information of a handover procedure comprises:
random access procedure state information corresponding to a handover target cell of the
handover procedure; wherein
the handover procedure is a conditional handover procedure;
the random access procedure state information comprises: random access procedure failure
information;
the random access procedure failure information comprises at least one of the following:
target information corresponding to one or a plurality of re-establishment failures;
a quantity of selections of handover to a candidate cell in one or a plurality of re-
establishments; and
at least one of a cell identity, a cell group identity, and a frequency identity that
correspond to each selection of handover to a candidate cell in one or a plurality of re-
establishments; and
the target information comprises: a random access contention detection result.
2. The method according to claim 1, wherein the random access procedure state information
further comprises:
random access procedure success information.
3. The method according to claim 2, wherein the random access procedure failure
information further comprises at least one of the following:
a quantity of one or a plurality of handover attempts;
a quantity of one or a plurality of handover failures;
a quantity of handover attempts corresponding to a final successful access in one or a
plurality of handover attempts;
a quantity of one or a plurality of re-establishment attempts;
a quantity of one or a plurality of re-establishment failures;
a quantity of re-establishment attempts corresponding to a final successful access in one or
a plurality of re-establishment attempts;

- a quantity of a plurality of handover attempts and re-establishment attempts;
- a quantity of a plurality of handover failures and re-establishment failures;
- a quantity of handover attempts or re-establishment attempts corresponding to a final successful access in a plurality of handover attempts or re-establishment attempts;
- target information corresponding to one or a plurality of handover failures;
- a measurement result that correspond to each selection of handover to a candidate cell in one or a plurality of re-establishments;
- time related information; and
- location related information.

4. The method according to claim 3, wherein the target information further comprises at least one of the following:

- a measurement result, wherein the measurement result is a measurement result of at least one of a local cell, a candidate cell, and a neighboring cell; and
- at least one of a cell identity, a cell group identity, and a frequency identity.

5. The method according to claim 4, wherein the measurement result is any one of the following:

- a measurement result at triggering a handover; and
- a measurement result at satisfaction of a trigger condition for determining a handover failure.

6. The method according to claim 2, wherein the random access procedure failure information further comprises at least one of the following:

- a trigger condition corresponding to one or a plurality of handover failures;
- a trigger condition index corresponding to one or a plurality of handover failures;
- a trigger condition corresponding to one or a plurality of re-establishment failures; and
- a trigger condition index corresponding to one or a plurality of re-establishment failures.

7. The method according to claim 6, wherein

the one comprises any one of the following:

- only one attempt, any one attempt, and the last attempt before a successful access;
- and/or,

the plurality comprises any one of the following:

all handover and re-establishment attempts, all handover attempts, and all re-establishment attempts.

8. The method according to claim 2, wherein the random access procedure success information comprises at least one of the following:

- a quantity of transmissions of a preamble of a final successful random access procedure;
- a contention detection result of a final successful random access;
- at least one of a trigger condition, a measurement result, a cell identity, a cell group identity, and a frequency identity that correspond to a successful handover;
- at least one of a trigger condition, a measurement result, a cell identity, a cell group identity, and a frequency identity that correspond to a successful re-establishment;
- a quantity of a plurality of handover attempts before a successful random access;
- a quantity of a plurality of re-establishment attempts before a successful random access;
- a quantity of a plurality of handover attempts and re-establishment attempts before a successful random access;
- at least one of a trigger condition, a measurement result, a cell identity, a cell group identity, and a frequency identity that correspond to each handover attempt before a successful random access; and
- at least one of a measurement result, a cell identity, a cell group identity, and a frequency identity that correspond to each re-establishment attempt before a successful random access.

9. The method according to claim 1, wherein the state information of the handover procedure further comprises connection failure information corresponding to a handover target cell of the handover procedure, and the connection failure information comprises at least one of the following:

RLF information, handover failure information, and re-establishment failure information.

10. The method according to claim 1 or 9, wherein the state information of the handover procedure further comprises radio link failure RLF information in the handover procedure, and the RLF information comprises at least one of the following:

- handover stage information corresponding to an RLF;
- a measurement result, wherein the measurement result is a measurement result of at least one of a local cell, a candidate cell, and a neighboring cell; and

at least one of a cell identity, a cell group identity, and a frequency identity corresponding to an RLF.

11. The method according to claim 6 or 8, wherein in a case that the state information of a handover procedure comprises the trigger condition, the state information of a handover procedure further comprises:

effective range information corresponding to the trigger condition.

12. The method according to claim 1, wherein in a case that the terminal has a connection failure, the state information of a handover procedure further comprises:

connection failure timing information, wherein

the connection failure timing information comprises any one of the following:

duration from start of execution of a target handover command to failure of establishing a connection to a target cell corresponding to the target handover command;

duration from triggering a handover procedure for the first time to failure of establishing a connection to a target cell corresponding to a target handover command; and

duration from receipt of a target handover command to failure of establishing a connection to a target cell corresponding to the target handover command.

13. The method according to claim 12, wherein the target handover command is any one of the following:

the first triggered handover command;

a handover command corresponding to a candidate cell for a current handover or re-establishment;

a handover command corresponding to a last candidate cell for handover or re-establishment before a successful handover to a candidate cell; and

a handover command corresponding to a last candidate cell for handover or re-establishment before a successful re-establishment to a candidate cell or another cell.

14. The method according to claim 1, wherein the transmitting state information of a handover procedure to the network device comprises:

transmitting the state information of a handover procedure to the network device in a case that any one of the following is satisfied:

the terminal receives request information from the network device for requesting the terminal to report state information of a handover procedure; and

a connection failure occurs in a handover procedure of the terminal.

15. The method according to claim 14, wherein the request information requests the terminal to report at least one of the following:

- random access state information;

- connection failure information; and

- RLF information in the handover procedure.

16. The method according to claim 14, wherein that a connection failure occurs in a handover procedure of the terminal comprises at least one of the following:

- the whole handover procedure fails;

- a timer for determining a handover failure expires;

- access to a candidate cell fails before a preset timer expires;

- re-establishment fails before a preset timer expires;

- handover attempt(s) corresponding to one or a plurality of handover commands fail in the handover procedure;

- handover attempt(s) corresponding to one or a plurality of target cells fail in the handover procedure;

- one or a plurality of re-establishments fail in the handover procedure;

- an RLF occurs in the handover procedure;

- a re-establishment procedure is initiated after a handover failure or an RLF occurs; and

- cell selection is performed after a handover failure or an RLF occurs.

17. A method for reporting state information, applied to a network device and comprising:

- receiving state information of a handover procedure from a terminal, wherein

- the state information of a handover procedure comprises:

- random access procedure state information corresponding to a handover target cell of the handover procedure; wherein

- the handover procedure is a conditional handover procedure;

- the random access procedure state information comprises: random access procedure failure information;

- the random access procedure failure information comprises at least one of the following:

- target information corresponding to one or a plurality of re-establishment failures;

a quantity of selections of handover to a candidate cell in one or a plurality of re-establishments; and

at least one of a cell identity, a cell group identity, and a frequency identity that correspond to each selection of handover to a candidate cell in one or a plurality of re-establishments; and

the target information comprises: a random access contention detection result.

18. A communications device, comprising: a memory, a processor, and a computer program that is 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 method for reporting state information are implemented, the method comprises:

transmitting state information of a handover procedure to a network device, wherein the state information of a handover procedure comprises:

random access procedure state information corresponding to a handover target cell of the handover procedure; wherein

the handover procedure is a conditional handover procedure;

the random access procedure state information comprises: random access procedure failure information;

the random access procedure failure information comprises at least one of the following:

target information corresponding to one or a plurality of re-establishment failures;

a quantity of selections of handover to a candidate cell in one or a plurality of re-establishments; and

at least one of a cell identity, a cell group identity, and a frequency identity that correspond to each selection of handover to a candidate cell in one or a plurality of re-establishments; and

the target information comprises: a random access contention detection result.