CLAIMS

1. A network connection method, comprising:

determining whether a radio signal of an accessible non-cellular network is detected during a network connection through a cellular network;

determining, when the radio signal is detected, whether a service state of a presently processed data service meets a first preset condition, the first preset condition being a condition that does not influence service quality of the data service during a handover of a network access mode; and

performing a network connection based on the radio signal when the service state meets the first preset condition,

wherein performing the network connection based on the radio signal when the service state meets the first preset condition comprises:

when the service state meets the first preset condition, performing association or attachment to the non-cellular network based on the radio signal; in case of keeping connection of the cellular network, determining whether the data service is capable of being processed through the non-cellular network; and when the data service is capable of being processed, performing handover of the network access mode from the cellular network to the non-cellular network, and performing the network connection based on the radio signal; or

when the service state meets the first preset condition, acquiring a network state, the network state comprising at least one of present signal strength of the cellular network, a present transmission speed of the cellular network or present signal strength of the radio signal; determining whether the network state meets a third preset condition, the third preset condition comprising at least one of the following: the present signal strength of the cellular network being less than a first preset strength threshold, the present transmission speed of the cellular network being less than a preset transmission speed, or the present signal strength of the radio signal being more than a second preset strength threshold; and when the network state meets the third preset condition, performing handover of the network access mode from the cellular network to the non-cellular network, and performing the network connection based on the radio signal.

2. The method of claim 1, wherein determining whether the service state of the presently processed data service meets the first preset condition comprises at least one of the following:

when determining through the service state that no network data is presently transmitted, determining that the service state meets the first preset condition;

when determining through the service state that the network data is presently being transmitted, determining, if the network data meets a second preset condition, that the service state meets the first preset condition;

when determining through the service state that an application program is presently running, determining, if the application program is not a specified application program, that the service state meets the first preset condition;

when determining through the service state that there is no network data to be transmitted presently, determining that the service state meets the first preset condition;

when determining through the service state that there is the network data to be transmitted presently, determining, if a transmission time interval between present time and transmission start time of the network data to be transmitted is longer than a preset time interval, that the service state meets the first preset condition;

when determining through the service state that a specified webpage is not presently opened, determining that the service state meets the first preset condition; or

when determining through the service state that the specified webpage has presently been opened, determining, if a page state of the specified webpage is not presently a specified state, that the service state meets the first preset condition.

3. The method of claim 2, wherein determining, if the network data meets the second preset condition, that the service state meets the first preset condition comprises at least one of the following:

in condition that a data type of the network data is not a specified type, determining that the service state meets the first preset condition;

in condition that the network data is not data of the specified application program, determining that the service state meets the first preset condition; or

in condition that a transmission rate of the network data is less than a preset rate threshold, determining that the service state meets the first preset condition.

4. The method of any one of claims 1-3, wherein after determining whether the service state of the presently processed data service meets the first preset condition, further comprising:

when the service state does not meet the first preset condition and it is determined through the service state that the network data is presently being transmitted or there is the network data to be transmitted, monitoring a transmission process of the network data; and

when it is monitored that transmission of the network data is ended or a transmission cycle of the network data is longer than a preset transmission cycle, performing the network connection based on the radio signal.

5. The method of any one of claims 1-3, wherein after determining whether the service state of the presently processed data service meets the first preset condition, further comprising:

when the service state does not meet the first preset condition and it is determined through the service state that the specified application program is presently running, monitoring a running state of the specified application program; and

performing the network connection based on the radio signal when it is monitored that the specified application program stops running.

6. The method of any one of claims 1-3, wherein after determining whether the service state of the presently processed data service meets the first preset condition, further comprising:

when the service state does not meet the first preset condition and it is determined through the service state that the specified webpage has presently been opened and a page state of the specified webpage is presently the specified state, monitoring the page state of the specified webpage; and

performing the network connection based on the radio signal when it is monitored that the page state of the specified webpage is not the specified state.

7. The method of any one of claims 1-3, wherein after determining whether the service state of the presently processed data service meets the first preset condition, further comprising:

when the service state does not meet the first preset condition, performing association or attachment to the non-cellular network based on the radio signal;

continuing monitoring the service state; and

performing the network connection when it is monitored that the service state meets the first preset condition.

8. A network connection device, comprising:

a judgment module, configured to determine whether a radio signal of an accessible non-cellular network is detected during a network connection through a cellular network;

a determination module, configured to, determine, when the radio signal is detected, whether a service state of a presently processed data service meets a first preset condition, the first preset condition being a condition that does not influence service quality of the data service during a handover of a network access mode; and

a first connection module, configured to perform the network connection based on the radio signal when the service state meets the first preset condition,

wherein the first connection module comprises:

an associating submodule, configured to, when the service state meets the first preset condition, perform association or attachment to the non-cellular network based on the radio signal; a judgment submodule, configured to, in case of keeping connection of the cellular network, determine whether the data service is capable of being processed through the non-cellular network; and a first connection submodule, configured to, when the data service is capable of being processed, perform handover of the network access mode from the cellular network to the non-cellular network and perform the network connection based on the radio signal; or

an acquisition submodule, configured to, when the service state meets the first preset condition, acquire a network state, the network state comprising at least one of present signal strength of the cellular network, a present transmission speed of the cellular network or present signal strength of the radio signal; an eighth determination submodule, configured to determine whether the network state meets a third preset condition, the third preset condition comprising at least one of the following: the present signal strength of the cellular network being less than a

first preset strength threshold, the present transmission speed of the cellular network being less than a preset transmission speed, or the present signal strength of the radio signal being more than a second preset strength threshold; and a second connection submodule, configured to, when the network state meets the third preset condition, perform handover of the network access mode from the cellular network to the non-cellular network and perform the network connection based on the radio signal.

9. The device of claim 8, wherein the determination module comprises at least one of the following submodules:

a first determination submodule, configured to, when determining through the service state that no network data is presently transmitted, determine that the service state meets the first preset condition;

a second determination submodule, configured to, when determining through the service state that the network data is presently being transmitted, determine, if the network data meets a second preset condition, that the service state meets the first preset condition;

a third determination submodule, configured to, when determining through the service state that an application program is presently running, determine, if the application program is not a specified application program, that the service state meets the first preset condition;

a fourth determination submodule, configured to, when determining through the service state that there is no network data to be transmitted presently, determine that the service state meets the first preset condition;

a fifth determination submodule, configured to, when determining through the service state that there is the network data to be transmitted presently, determine, if a transmission time interval between present time and starting time of transmission of the network data to be transmitted is longer than a preset time interval, that the service state meets the first preset condition;

a sixth determination submodule, configured to, when determining through the service state that a specified webpage is not presently opened, determine that the service state meets the first preset condition; or

a seventh determination submodule, configured to, when determining through

the service state that the specified webpage has presently been opened, determine, if a page state of the specified webpage is not presently a specified state, that the service state meets the first preset condition.

10. The device of claim 9, wherein the second determination submodule is configured to execute at least one of the following:

in condition that a data type of the network data is not a specified type, determining that the service state meets the first preset condition;

in condition that the network data is not data of the specified application program, determining that the service state meets the first preset condition; or

in condition that a transmission rate of the network data is less than a preset rate threshold, determining that the service state meets the first preset condition.

11. The device of any one of claims 8-10, further comprising:

a first monitoring module, configured to, when the service state does not meet the first preset condition and it is determined through the service state that the network data is presently being transmitted or there is the network data to be transmitted, monitor a transmission process of the network data; and

a second connection module, configured to, when it is monitored that transmission of the network data is ended or a transmission cycle of the network data is longer than a preset transmission cycle, perform the network connection based on the radio signal.

12. The device of any one of claims 8-10, further comprising:

a second monitoring module, configured to, when the service state does not meet the first preset condition and it is determined through the service state that the specified application program is presently running, monitor a running state of the specified application program; and

a third connection module, configured to perform the network connection based on the radio signal when it is monitored that the specified application program stops running.

13. The device of any one of claims 8-10, further comprising:

a third monitoring module, configured to, when the service state does not meet the first preset condition and it is determined through the service state that the specified webpage has presently been opened and a page state of the specified webpage is presently the specified state, monitor the page state of the specified webpage; and

a fourth connection module, configured to perform the network connection based on the radio signal when it is monitored that the page state of the specified webpage is not the specified state.

14. The device of any one of claims 8-10, further comprising:

an associating module, configured to, when the service state does not meet the first preset condition, perform association or attachment to the non-cellular network based on the radio signal;

a fourth monitoring module, configured to continue monitoring the service state; and

a fifth connection module, configured to perform the network connection when it is monitored that the service state meets the first preset condition.