CLAIMS

What is claimed is:

1. A packet loss rate detection method, comprising:

determining, by a session management network element, that link status detection needs to be performed on a quality of service flow in a multi-access protocol data unit session; and

sending, by the session management network element, a link status detection indication to a first device, wherein the link status detection indication is for enabling a link status detection function, and the link status detection function comprises a packet loss rate detection function.

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

sending, by the session management network element, a counting indication to a second device, wherein

the counting indication indicates the second device to count a quantity of service data packets sent by the first device to the second device on a link; or

the counting indication indicates the second device to calculate, when receiving link status detection information, a quantity of service data packets received on a link, and send the quantity of the service data packets received on the link to the first device.

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

sending, by the session management network element, a packet loss rate detection indication to a second device, wherein

the packet loss rate detection indication indicates the second device to calculate a packet loss rate of service data packets when receiving link status detection information; or

the packet loss rate detection indication indicates the second device to calculate, when receiving link status detection information, a quantity of service data packets received on a link, and calculate a packet loss rate of the service data packets by using the quantity of the service data packets received on the link.

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

sending, by the session management network element, a counting indication to the first device, wherein

the counting indication indicates the first device to count a quantity of service data packets sent by the first device to a second device on a link.

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

sending, by the session management network element, a packet loss rate detection indication to the first device, wherein

the packet loss rate detection indication indicates the first device to calculate, when receiving, from a second device, a quantity of received service data packets that is counted by the second device, a packet loss rate of the service data packets.

6. The method according to any one of claims 1 to 5, wherein the method further comprises:

sending, by the session management network element, a link status reporting indication to the first device and/or the second device, wherein the link status reporting indication indicates to report the packet loss rate of the service data packets;

sending, by the session management network element, a link status reporting frequency to the first device and/or the second device, wherein the link status reporting frequency indicates a frequency of reporting the packet loss rate of the service data packets; or

sending, by the session management network element, a link status reporting cycle to the first device and/or the second device, wherein the link status reporting cycle indicates a cycle of reporting the packet loss rate of the service data packets.

7. The method according to any one of claims 1 to 6, wherein the determining, by a session management network element, that link status detection needs to be performed on a quality of service flow comprises:

when determining that a steering function of the quality of service flow is access traffic steering, switching, splitting low-layer ATSSS-LL, determining, by the session management network element, that link status detection needs to be performed on the quality of service flow;

when determining that a steering function of the quality of service flow is ATSSS-LL, and that a steering mode of the quality of service flow is one of a load-balancing mode, a smallest delay mode, a priority-based mode, or an active-standby mode, determining, by the session management network element, that link status detection needs to be performed on the quality of service flow; or

when determining that a link status threshold of the quality of service flow is received from a policy control network element, determining, by the session management network element, that link status detection needs to be performed on the quality of service flow, wherein the link status threshold comprises a packet loss rate threshold.

8. The method according to any one of claims 1 to 7, wherein the first device is a terminal device.

9. The method according to any one of claims 1 to 8, wherein the link status detection indication comprises an IP address or/and a port number of the link status detection function.

10. The method according to any one of claims 1 to 9, wherein the method further comprises:

sending, by the session management network element, identification information of the quality of service flow to the first device, wherein the identification information comprises at least one QFI; and

that the link status detection indication is for enabling a link status detection function comprises:

the link status detection indication is for enabling a link status detection function for the quality of service flow.

11. The method according to any one of claims 7 to 10, wherein the method further comprises:

sending, by the session management network element, a link status detection indication to the second device, wherein the link status detection indication is for enabling a link status detection function, and the link status detection function comprises a packet loss rate detection function.

12. The method according to any one of claims 7 to 10, wherein the method further comprises:

receiving, by the session management network element, an IP address and/or a port number of the link status detection function from the second device.

13. The method according to any one of claims 1 to 12, wherein the second device is a user plane network element.

14. The method according to claim 12 or 13, wherein the method further comprises:

allocating, by the second device, the IP address and/or the port number to the link status detection function corresponding to the quality of service flow.

15. A packet loss rate detection method, comprising:

sending, by a first device, first link status detection information to a second device through a link, wherein the first link status detection information indicates a quantity of service data packets sent by the first device to the second device on the link; and

receiving, by the first device, a packet loss rate of the service data packets, wherein the packet loss rate of the service data packets is obtained based on the first link status detection information.

16. The method according to claim 15, wherein before the sending, by a first device, first link

status detection information to a second device, the method further comprises:

sending, by the first device, second link status detection information to the second device by using the link; and

that the first link status detection information indicates a quantity of service data packets sent by the first device to the second device on the link comprises:

the first link status detection information indicates: a first quantity of service data packets sent by the first device to the second device on the link within a time when the first device sends the second link status detection information and the first device sends the first link status detection information.

17. The method according to claim 16, wherein the second link status detection information indicates an initial data packet or an initial time for calculating the packet loss rate.

18. The method according to claim 16 or 17, wherein after the sending, by a first device, first link status detection information to a second device, the method further comprises:

sending, by the first device, third link status detection information to the second device by using the link, wherein

the third link status detection information indicates: the first quantity, and a second quantity of service data packets sent by the first device to the second device on the link within a time when the first device sends the first link status detection information and the first device sends the third link status detection information.

19. The method according to any one of claims 16 to 18, wherein the first link status detection information and the second link status detection information are two adjacent pieces of link status detection information.

20. The method according to claim 15, wherein

that the first link status detection information indicates a quantity of service data packets sent by the first device to the second device on the link comprises:

the first link status detection information indicates: a third quantity of service data packets sent by the first device to the second device on the link within a time when the first device sends an initial service data packet on the link and the first device sends the first link status detection information.

21. The method according to claim 15, wherein that the first link status detection information indicates a quantity of service data packets sent by the first device to the second device on the link

comprises:

the first link status detection information indicates the first device to send a default quantity of service data packets to the second device on the link.

22. The method according to claim 21, wherein the method further comprises:

sending, by the first device, indication information to the second device, wherein the indication information indicates a value of the default quantity.

23. The method according to any one of claims 15 to 22, wherein the first link status detection information comprises a link status detection data packet.

24. The method according to any one of claims 15 to 23, wherein a service flow on the link comprises any one of the following:

a protocol data unit PDU session, a service data flow SDF, an IP data flow, an Ethernet data flow, or at least one QoS flow.

~~25. The method according to any one of claims 15 to 24, wherein the first device is a terminal device, and the second device is a user plane network element; or the first device is a user plane network element, and the second device is a terminal device.~~

~~26. The method according to any one of claims 15 to 25, wherein the method further comprises:~~

~~receiving, by the first device, a link status detection indication from a session management network element, wherein the link status detection indication is for enabling a link status detection function, and the link status detection function comprises a packet loss rate detection function.~~

~~27. The method according to claim 26, wherein the method further comprises:~~

~~receiving, by the first device, identification information of the service flow from the session management network element, wherein the identification information comprises a PDU session identifier, service data flow description information, IP quintuple information, Ethernet flow description information, or at least one QFI; and~~

~~that the link status detection indication is for enabling a link status detection function comprises:~~

~~the link status detection indication is for enabling a link status detection function for the service flow.~~

~~28. The method according to any one of claims 15 to 27, wherein the method further comprises:~~

~~receiving, by the first device, a counting indication from the session management network element, wherein the counting indication indicates the first device to count the quantity of the service data packets sent by the first device to the second device on the link.~~

~~29. The method according to any one of claims 15 to 28, wherein the method further comprises:~~

~~receiving, by the first device, a link status reporting indication from the session management network element, wherein the link status reporting indication indicates to report the packet loss rate of the service data packets;~~

~~receiving, by the first device, a link status reporting frequency from the session management network element, wherein the link status reporting frequency indicates a frequency of reporting the packet loss rate of the service data packets; or~~

~~receiving, by the first device, a link status reporting cycle from the session management network element, wherein the link status reporting cycle indicates a cycle of reporting the packet loss rate of the service data packets.~~

~~30~~25. A communication method, comprising:

receiving, by a terminal device, a link status detection indication from a session management network element, wherein the link status detection indication is for enabling a link status detection function for a quality of service flow in a multi-access protocol data unit session, and the link status detection function comprises a packet loss rate detection function; and

enabling, by the terminal device, the link status detection function.

~~31~~26. The method according to claim ~~30~~25, wherein the link status detection indication comprises an IP address or/and a port number of a link status detection function in a user plane function network element.

~~32~~27. The method according to claim ~~30~~ 25 or ~~31~~26, wherein the method further comprises:

receiving, by the terminal device, identification information of the quality of service flow from the session management network element.

~~33~~28. The method according to any one of claims ~~30~~ 25 to ~~32~~27, wherein the method further comprises:

sending, by the terminal device, link status detection information to the user plane function network element by using the quality of service flow;

receiving, by the terminal device, a quantity of data packets from the user plane function

network element, wherein the quantity of the data packets is a quantity of data packets received by the user plane function network element on the quality of service flow after receiving the link status detection information; and

determining, by the terminal device, a packet loss rate of the quality of service flow based on the quantity of the data packets.

~~34. A communication apparatus, comprising a processor, wherein the processor is coupled to a memory, the memory is configured to store a program or instructions, and when the program or the instructions are executed by the processor, the apparatus is enabled to perform the method according to any one of claims 1 to 13.~~

~~35. A communication apparatus, comprising a processor, wherein the processor is coupled to a memory, the memory is configured to store a program or instructions, and when the program or the instructions are executed by the processor, the apparatus is enabled to perform the method according to any one of claims 15 to 29 or 30 to 33.~~

~~36~~29. A communication apparatus, comprising:

a memory, configured to store computer instructions; and

a processor, configured to execute the computer instructions stored in the memory, to enable the apparatus to perform the method according to any one of claims 1 to 13, 15-24 or 25-28.

~~37. A communication apparatus, comprising:~~

~~a memory, configured to store computer instructions; and~~

~~a processor, configured to execute the computer instructions stored in the memory, to enable the apparatus to perform the method according to any one of claims 15 to 29 or 30 to 33.~~

~~38. A computer readable storage medium, storing a computer program or instructions, and when the computer program or the instructions are executed, the method according to any one of claims 1 to 13, 15 to 29, or 30 to 33 is performed.~~

~~39~~30. A communication system, comprising:

a session management network element, configured to perform the method according to any one of claims 1 to 13; and

a user plane function network element, configured to receive a link status detection indication from the session management network element, wherein the link status detection indication is for enabling a link status detection function.