

CLAIMS

What is claimed is:

1. A bearer processing system comprising:

5 a gateway user plane (GW-U) comprising:

a first receiver configured to receive a data packet, a first processor and a first memory for storing a first program to be executed in the first processor, the first program comprising instructions that when executed cause the first processor to:

match the data packet with a rule, and

10 determine that a rule matching result of the data packet meets a trigger condition for bearer processing, wherein the rule is a subscription event obtained by the GW-U from a gateway control plane (GW-C), the subscription event comprises type information description of a data service on which bearer processing needs to be performed, and the trigger condition comprises that the data packet matches the type information
15 description;

a first transmitter configured to send bearer processing indication information to the GW-C in response to determining that the rule matching result of the data packet meets the trigger condition for bearer processing, wherein the bearer processing indication information is used to trigger the GW-C to perform bearer processing according to quality
20 of service (QoS) information of a data service corresponding to the data packet; and

the GW-C comprising:

a second receiver configured to receive the bearer processing indication information from the GW-U,

a second processor and a second memory for storing a second program to be
25 executed in the second processor, the second program comprising instructions that when executed cause the second processor to

determine, according to the bearer processing indication information, the QoS information of the data service corresponding to the data packet, and perform bearer processing according to the QoS information of the data service corresponding to the data packet.

5 2. The bearer processing system according to claim 1, wherein the rule further comprises a correspondence between the data service and the QoS information;

wherein the trigger condition further comprises that QoS information required for the data service is inconsistent with QoS information of a current bearer that is currently used for transmitting the data service; and

10 wherein the first program comprises further instructions that cause the first processor to match the data packet with the rule by finding, from the rule, the QoS information required for the data service corresponding to the data packet.

3. The bearer processing system according to claim 2, wherein the QoS information required for the data service is inconsistent with the QoS information of the current bearer
15 in response to determining that:

an allocation/retention priority (ARP) required for the data service is inconsistent with an ARP of the current bearer that is currently used for transmitting the data service, or a QoS class identifier (QCI) required for the data service is inconsistent with a QCI of the current bearer that is currently used for transmitting the data service.

20 4. The bearer processing system according to claim 2, wherein the bearer processing indication information comprises the QoS information required for the data service.

5. The bearer processing system according to claim 2, wherein each correspondence that is between a data service and QoS information and that is in the rule is corresponding to a rule identifier, and the bearer processing indication information comprises a rule identifier of a correspondence matching the data packet; and

5 wherein the second program causes the second processor to determine the QoS information of the data service corresponding to the data packet by causing the second processor to determine, according to the rule identifier, the QoS information of the data service corresponding to the data packet.

6. The bearer processing system according to claim 1, wherein the GW-C further
10 comprises a second transmitter configured to send a subscription event to the GW-U; and

 wherein the second program causes the second processor to determine the QoS information of the data service corresponding to the data packet by causing the second processor to

 determine, according to the bearer processing indication information, a data
15 service type corresponding to the data packet; and

 allocate, QoS according to the data service type; or receive, by the GW-C from another network element device, QoS that is allocated according to the data service type, wherein the another network element device is a network element device that is in an evolved packet core (EPC) and that is different from the GW-U and the GW-C.

20 7. The bearer processing system according to claim 6, wherein the bearer processing indication information comprises an application identifier, and the application identifier is used to identify a data service type matching the data packet.

8. The bearer processing system according to claim 6, wherein the type information description that is in the subscription event and that is of the data service on which bearer

processing needs to be performed is corresponding to an event identifier, and the bearer processing indication information comprises an event identifier corresponding to type information description matching the data packet; and

wherein the second program causes the second processor to determine the data service type corresponding to the data packet by causing the second processor to:

determine, according to the event identifier, the type information description that is of the data service and that is corresponding to the event identifier; and

determine, according to the type information description, the data service type corresponding to the data packet.

9. The bearer processing system according to claim 1, wherein the first transmitter is further configured to:

send packet feature information of the data packet to the GW-C, wherein the packet feature information is used by the GW-C to bind the data service corresponding to the data packet to a bearer; and

wherein the second program comprises further instructions that cause the second processor to:

receive the packet feature information that is of the data packet from the GW-U, and bind, according to the packet feature information, the data service corresponding to the data packet to the bearer.

10. The bearer processing system according to claim 9, wherein the packet feature information is packet filtering information, and the packet filtering information comprises items of a service quintet of the data packet.

11. The bearer processing system according to claim 1, wherein the second program comprises further instructions that cause the second processor to send rule update

indication information to the GW-U, wherein the rule update indication information comprises content of a modified rule, a rule identifier of the modified rule, and a bearer processing manner corresponding to the modified rule; and

5 wherein the first program comprises further instructions that cause the first processor to: receive the rule update indication information from the GW-C, update the rule according to the rule update indication information, and delete a data service processing result associated with the modified rule, wherein the data service processing result is a result obtained by processing, by the GW-U, a data service corresponding to a data packet that meets the trigger condition for bearer processing.

10 12. The bearer processing system according to claim 1,

wherein the second program comprises further instructions that cause the second processor to:

send a traffic query request to the GW-U, wherein the traffic query request is used to instruct the GW-U to collect statistics about traffic of a specified bearer;

15 receive a statistical result obtained by collecting, by the GW-U, statistics about the traffic of the specified bearer according to the traffic query request; and

delete the specified bearer if it is determined, according to the statistical result, that accumulated traffic data of the specified bearer does not change at a specified time interval; and

20 wherein the first program comprises further instructions that cause the first processor to:

receive the traffic query request from the GW-C, collect statistics about the traffic of the specified bearer according to the traffic query request, and send the statistical result to the GW-C.

13. A gateway user plane (GW-U) comprising:
- a receiver configured to receive a data packet;
 - a transmitter;
 - a processor; and
- 5 a memory storing a program to be executed in the processor, the program comprising instructions for matching the data packet with a rule, and
- controlling the transmitter to send bearer processing indication information to a gateway control plane (GW-C) in response to determining that a rule matching result of the data packet meets a trigger condition for bearer processing;
- 10 wherein the bearer processing indication information is used to trigger the GW-C to perform bearer processing according to quality of service (QoS) information of a data service corresponding to the data packet, wherein the transmitter is configured to send the bearer processing indication information to the GW-C; and
- wherein the rule is a subscription event transmitted to the GW-U from the GW-C,
- 15 the subscription event comprises type information description of a data service on which bearer processing needs to be performed, and the trigger condition comprises that the data packet matches the type information description.
14. The GW-U according to claim 13, wherein the rule is a correspondence between the data service and the QoS information; and
- 20 wherein the program comprises further instructions that when executed cause the processor to
- find, from the rule, QoS information required for the data service corresponding to the data packet, and
- determine that the trigger condition further comprises that the QoS information

required for the data service is inconsistent with QoS information of a current bearer that is currently used for transmitting the data service.

15. The GW-U according to claim 14, wherein the bearer processing indication information comprises the QoS information required for the data service, or a rule identifier
5 of a correspondence matching the data packet.

16. The GW-U according to claim 13,
wherein the bearer processing indication information comprises an application identifier, and the application identifier is used to identify a data service type matching the data packet; or

10 wherein the bearer processing indication information comprises an event identifier corresponding to type information description matching the data packet.

17. A gateway control plane (GW-C), comprising:

a receiver configured to receive bearer processing indication information from a gateway user plane (GW-U), wherein the bearer processing indication information is used
15 to instruct the GW-C to perform bearer processing according to quality of service (QoS) information of a data service corresponding to a data packet;

a processor; and

a memory storing a program to be executed in the processor, the program comprising instructions for:

20 determining, according to the bearer processing indication information, the QoS information of the data service corresponding to the data packet, and

performing bearer processing according to the QoS information of the data service corresponding to the data packet; and

a transmitter configured to transmit a rule to the GW-U, wherein the rule is a

subscription event, the subscription event comprises type information description of a data service on which bearer processing needs to be performed.

18. The GW-C according to claim 17, wherein the program comprises further instructions that when executed cause the processor to:

5 determine whether QoS information of all bearers in an evolved packet core EPC comprises QoS information consistent with the QoS information of the data service corresponding to the data packet; and

 in response to determining that the QoS information of all the bearers in the evolved packet core comprises the QoS information consistent with the QoS information of the data
10 service corresponding to the data packet, update a bearer corresponding to the QoS information that is consistent with the QoS information of the data service corresponding to the data packet, wherein QoS information of an updated bearer is consistent with the QoS information of the data service corresponding to the data packet; or

 in response to determining that the QoS information of all the bearers in the
15 evolved packet core does not comprise the QoS information consistent with the QoS information of the data service corresponding to the data packet, create a dedicated bearer, wherein QoS information of the dedicated bearer is consistent with the QoS information of the data service corresponding to the data packet.

19. The GW-C according to claim 17, wherein
20 the program comprises further instructions that when executed cause the processor to:

 determine, according to the bearer processing indication information, a data service type corresponding to the data packet; and

 allocate, QoS according to the data service type; or the receiver is configured to

receive from another network element device, QoS that is allocated according to the data service type, wherein the another network element device is a network element device that is in an evolved packet core (EPC) and that is different from the GW-U and the GW-C.