CLAIMS

What is claimed is:

1. A service forwarding entity (SFE) comprising:

a memory configured to store instructions; and

a processor coupled to the memory and configured to execute the instructions to cause the SFE to:

obtain a first fault tracing detection request packet comprising a path identifier (ID), wherein the path ID identifies a path of a service chain;

determine, after obtaining the first fault tracing detection request packet, to communicate with a first service function (SF) node on the service chain;

obtain a first ID of the first SF node; and

send a first fault tracing detection response packet to a device for initiating fault detection,

wherein the first fault tracing detection response packet comprises the path ID and the first ID.

2. The SFE of claim 1, wherein the processor is further configured to execute the instructions to cause the SFE to:

determine, based on the path ID, to forward the first fault tracing detection request packet using a first forwarding entry, wherein the first forwarding entry comprises the path ID and an address of the first SF node;

further send the first fault tracing detection request packet to the first SF node based on the address; and

receive a second fault tracing detection request packet from the first SF node, wherein the second fault tracing detection request packet comprises the path ID.

3. The SFE of claim 2, wherein the first fault tracing detection request packet further comprises a first parameter identifying the first SF node or identifying a previous-hop SF node of the first SF node on the service chain, wherein the first forwarding entry further comprises the first parameter, and wherein the processor is further configured to execute the instructions to cause the SFE to further determine to forward the first fault tracing detection request packet based on the first parameter.

4. The SFE of claim 3, wherein the first fault tracing detection request packet further comprises a node list, wherein the node list comprises a second ID of the previous-hop SF node, and wherein the processor is further configured to execute the instructions to cause the SFE to:

obtain an updated node list comprising the second ID, wherein an order of all SF nodes in the updated node list is the same as an order of all SF nodes on the service chain; and

add the updated node list to the first fault tracing detection response packet.

5. The SFE of claim 3, wherein the processor is further configured to execute the instructions to cause the SFE to add the first parameter or the first ID to the first fault tracing detection response packet.

6. The SFE of claim 2, wherein the first fault tracing detection request packet further comprises a second ID of an SF node used as an end point, and wherein the processor is further configured to execute the instructions to cause the SFE to end detection on the service chain when the first ID is the same as the second ID.

7. The SFE of claim 1, wherein the processor is further configured to execute the instructions to cause the SFE to send a second fault tracing detection response packet to the device for initiating the fault detection, and wherein the second fault tracing detection response packet comprises the path ID and a second ID of the SFE.

8. The SFE of claim 1, wherein the processor is further configured to execute the instructions to cause the SFE to:

receive the first fault tracing detection request packet from the device for initiating the fault detection to obtain the first fault tracing detection request packet;

receive the first fault tracing detection request packet from a previous-hop SFE of the SFE on the service chain to obtain the first fault tracing detection request packet; or

generate the first fault tracing detection request packet to obtain the first fault tracing detection request packet.

9. A method implemented by a device for initiating fault detection, the method comprising:

sending, to a service forwarding entity (SFE), a first fault tracing detection request packet comprising a path identifier (ID) identifying a path of a service chain;

receiving, from the SFE in response to the first fault tracing detection request packet, a first fault tracing detection response packet comprising the path ID and a first ID of a first service function (SF) node; and

determining, based on the first fault tracing detection response packet, that the service chain passes through the first SF node.

10. The method of claim 9, further comprising:

determining to forward the first fault tracing detection request packet based on a forwarding entry and the path ID, wherein the forwarding entry comprises the path ID and a second ID of the SFE; and

further sending, to the SFE, the first fault tracing detection request packet according to the second ID.

11. The method of claim 9, wherein the first fault tracing detection request packet further comprises a first parameter identifying the first SF node or identifying a previous-hop SF node of the first SF node on the service chain.

12. The method of claim 9, wherein the first fault tracing detection request packet further comprises a time to live (TTL) field.

13. The method of claim 9, wherein the first fault tracing detection request packet further comprises a node list, wherein the node list comprises a second ID of a previous-hop SF node of the first SF node on the service chain, wherein the first fault tracing detection response packet further comprises an updated node list, wherein the updated node list comprises the second ID, and wherein an order of all SF nodes comprised in the updated node list is the same as an order of all the SF nodes on the service chain.

14. The method of claim 9, further comprising:

receiving, from the SFE, a second fault tracing detection response packet comprising the path ID and a second ID of the SFE; and

determining, based on the second fault tracing detection response packet, that the service chain passes through the SFE.

15. A device for initiating fault detection and comprising:

a memory configured to store instructions; and

a processor coupled to the memory and configured to execute the instructions to cause the device to:

send, to a service forwarding entity (SFE), a first fault tracing detection request packet comprising a path ID identifying a path of a service chain;

receive, from the SFE in response to the first fault tracing detection request packet, a first fault tracing detection response packet comprising the path ID and a first ID of a first service function (SF) node; and

determine, based on the first fault tracing detection response packet, that the service chain passes through the first SF node.

16. The device of claim 15, wherein the processor is further configured to execute the instructions to cause the device to:

determine to forward the first fault tracing detection request packet based on a forwarding entry and the path ID, wherein the forwarding entry comprises the path ID and a second ID of the SFE; and

further send, to the SFE, the first fault tracing detection request packet according to the second ID.

17. The device of claim 15, wherein the first fault tracing detection request packet further comprises a first parameter identifying the first SF node or identifying a previous-hop SF node of the first SF node on the service chain.

18. The device of claim 15, wherein the first fault tracing detection request packet further comprises a time to live (TTL) field.

19. The device of claim 15, wherein the first fault tracing detection request packet further comprises a node list, wherein the node list comprises a second ID of a previous-hop SF node of the first SF node on the service chain, wherein the first fault tracing detection response packet further comprises an updated node list, wherein the updated node list comprises the second ID, and wherein an order of all SF nodes comprised in the updated node list is the same as an order of all the SF nodes on the service chain.

20. The device of claim 15, wherein the processor is further configured to execute the instructions to cause the device to:

receive, from the SFE, a second fault tracing detection response packet comprising the path ID and a second ID of the SFE; and

determine, based on the second fault tracing detection response packet, that the service chain passes through the SFE.