CLAIMS

1. An in-situ flow detection method, applied to a network device, the method comprising:

receiving a first service packet carrying a first packet header, wherein the first packet header comprises at least a first in-situ flow detection option which is added to the first packet header by an ingress node of a first network domain and is for indicating an in-situ flow detection; and

when the network device is an ingress node of a second network domain, forwarding a second service packet in the second network domain; wherein the received first service packet is forwarded by a forwarding node of the first network domain to the network device, the second service packet is obtained by encapsulating a second packet header in an outer layer of the first service packet comprising the first in-situ flow detection option by the ingress node of the second network domain, the second packet header comprises at least a second in-situ flow detection option, and the second in-situ flow detection option is for indicating that the in-situ flow detection is performed on a same service flow in a same in-situ flow detection mode as the first in-situ flow detection option.

2. The method according to claim 1, wherein the second in-situ flow detection option is obtained by copying the first in-situ flow detection option;

or,

a detection control information field in the first in-situ flow detection option and a detection control information field in the second in-situ flow detection option comprise same detection control information; the detection control information is used to indicate the service flow and the in-situ flow detection mode.

3. The method according to claim 2, wherein the detection control information field at least comprises:

a FlowMonID field for indicating a service flow;

an in-situ flow detection mode field for indicating an in-situ flow detection mode.

4. The method according to claim 3, wherein the in-situ flow detection mode field comprises at least one of the following fields:

an L field for indicating a packet loss flag;

a D field for indicating a delay flag;

a FlowMonID Ext field for indicating a node identifier of the ingress node of the first network domain;

an IOAM-Trace-type field for indicating a data type of data for the in-situ flow detection.

5. The method according to claim 3, wherein the FlowMonID field occupies 20 bits.

6. The method according to claim 4, wherein

the L field and the D field occupy 1 bit respectively; and/or,

the FlowMonID Ext field occupies 20 bits; and/or,

the IOAM-Trace-type field occupies 24 bits.

7. The method according to claim 3, wherein the detection control information field further comprises:

a Period field for indicating a period of the in-situ flow detection.

8. The method according to claim 2, wherein the first in-situ flow detection option and the second in-situ flow detection option comprise other fields in addition to the detection control information field;

the other fields at least comprise:

a NextHeader field for indicating whether a type of extended data is carried, wherein when the NextHeader field is a first value, the NextHeader field indicates that a type of extended data is not carried, and when the NextHeader field is a second value, the NextHeader field indicates that a type of extended data is carried;

a Type-Length-Values (TLVs) field indicating a type of extended data, for indicating extended data being carried in the TLVs field when the NextHeader field is the second value; wherein the extended data comprises at least identifiers of one or more nodes through which a service packet passes.

9. The method according to claim 1, wherein the second packet header comprises an IPv6 extension header,

wherein the second in-situ flow detection option is an option of a Destination Option Header (DOH) in the IPv6 extension header.

10. The method according to claim 9, wherein the DOH further comprises a Bit Indexed Explicit Replication (BIER) packet header for carrying forwarding information on the second service packet to be forwarded in the second network domain.

11. The method according to claim 10, wherein when performing hop-by-hop in-situ flow detection, the second in-situ flow detection option is before the BIER packet header in the DOH; when performing end-to-end in-situ flow detection, the second in-situ flow detection option is after the BIER packet header in the DOH.

12. The method according to claim 9, wherein the IPv6 extension header further comprises a Segment Routing Header (SRH) for carrying path information on the second service packet to be forwarded in the second network domain.

13. The method according to claim 12, wherein when performing hop-by-hop in-situ flow detection option, the DOH is before the SRH in the IPv6 extension header; when performing end-to-end in-situ flow detection option, the DOH is after the SRH in the Pv6 extension header.

14. An electronic device, comprising a processor and a machine-readable storage medium;

wherein the machine-readable storage medium stores machine-executable instructions that can be executed by the processor;

the processor is configured to execute the machine-executable instructions to perform:

receiving a first service packet carrying a first packet header, wherein the first packet header comprises at least a first in-situ flow detection option which is added to the first packet header by an ingress node of a first network domain and is for indicating an in-situ flow detection; and

when the network device is an ingress node of a second network domain, forwarding a second service packet in the second network domain; wherein the received first service packet is forwarded by a forwarding node of the first network domain to the network

device, the second service packet is obtained by encapsulating a second packet header in an outer layer of the first service packet comprising the first in-situ flow detection option by the ingress node of the second network domain, the second packet header comprises at least a second in-situ flow detection option, and the second in-situ flow detection option is for indicating that the in-situ flow detection is performed on a same service flow in a same in-situ flow detection mode as the first in-situ flow detection option.

15. The electronic device according to claim 14, wherein the second in-situ flow detection option is obtained by copying the first in-situ flow detection option;

or,

a detection control information field in the first in-situ flow detection option and a detection control information field in the second in-situ flow detection option comprise same detection control information; the detection control information is used to indicate the service flow and the in-situ flow detection mode.

16. The electronic device according to claim 15, wherein the detection control information field at least comprises:

a FlowMonID field for indicating a service flow;

an in-situ flow detection mode field for indicating an in-situ flow detection mode.

17. The electronic device according to claim 16, wherein the in-situ flow detection mode field comprises at least one of the following fields:

an L field for indicating a packet loss flag;

a D field for indicating a delay flag;

a FlowMonID Ext field for indicating a node identifier of the ingress node of the first network domain;

an IOAM-Trace-type field for indicating a data type of data for the in-situ flow detection.

18. The electronic device according to claim 16, wherein the detection control information field further comprises:

a Period field for indicating a period of the in-situ flow detection.

19. The electronic device according to claim 15, wherein the first in-situ flow detection option and the second in-situ flow detection option comprise other fields in addition to the detection control information field;

the other fields at least comprise:

a NextHeader field for indicating whether a type of extended data is carried, wherein when the NextHeader field is a first value, the NextHeader field indicates that a type of extended data is not carried, and when the NextHeader field is a second value, the NextHeader field indicates that a type of extended data is carried;

a Type-Length-Values (TLVs) field indicating a type of extended data, for indicating extended data being carried in the TLVs field when the NextHeader field is the second value; wherein the extended data comprises at least identifiers of one or more nodes through which a service packet passes.

20. A machine-readable storage medium storing computer instructions, wherein the computer instructions are executed by a processor to implement an in-situ flow detection method comprising:

receiving a first service packet carrying a first packet header, wherein the first packet header comprises at least a first in-situ flow detection option which is added to the first packet header by an ingress node of a first network domain and is for indicating an in-situ flow detection; and

when the network device is an ingress node of a second network domain, forwarding a second service packet in the second network domain; wherein the received first service packet is forwarded by a forwarding node of the first network domain to the network device, the second service packet is obtained by encapsulating a second packet header in an outer layer of the first service packet comprising the first in-situ flow detection option by the ingress node of the second network domain, the second packet header comprises at least a second in-situ flow detection option, and the second in-situ flow detection option is for indicating that the in-situ flow detection is performed on a same service flow in a same in-situ flow detection mode as the first in-situ flow detection option.