

CLAIMS

What is claimed is:

1. A communication method, comprising:

determining, by a centralized user configuration function based on a core network packet delay budget CN PDB and buffer duration, an allowed maximum latency of a time-sensitive network TSN stream transmitted between an access network device and a user plane network element, wherein the maximum latency does not exceed a difference obtained by subtracting the buffer duration from the CN PDB, and the access network device is a transmit end of the TSN stream and the user plane network element is a receive end of the TSN stream, or the access network device is a receive end of the TSN stream and the user plane network element is a transmit end of the TSN stream;

sending, by the centralized user configuration function, first latency information to a centralized network configuration function, wherein the first latency information indicates the maximum latency;

receiving, by the centralized user configuration function, first configuration information from the centralized network configuration function, wherein the first configuration information indicates a packet transmission time of the transmit end of the TSN stream, and the packet transmission time indicated by the first configuration information is determined based on the maximum latency; and

sending, by the centralized user configuration function, the first configuration information to the transmit end of the TSN stream.

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

determining, by the centralized user configuration function, the buffer duration, wherein the buffer duration comprises: actual buffer duration for buffering a data frame by the transmit end of the TSN stream, or maximum possible buffer duration for buffering a data frame by the transmit end of the TSN stream.

3. The method according to claim 2, wherein the buffer duration comprises the maximum possible buffer duration, and the determining, by the centralized user configuration function, the buffer duration comprises:

determining, by the centralized user configuration function, that the maximum possible buffer duration is duration of a difference between an allowed latest packet transmission time of the transmit end of the TSN stream and an allowed earliest packet transmission time of the transmit end of the TSN stream.

4. The method according to claim 2, wherein the buffer duration comprises the maximum possible buffer duration, and the determining, by the centralized user configuration function, the

buffer duration comprises:

determining, by the centralized user configuration function, that the maximum possible buffer duration is a smaller one of the following two pieces of duration: duration of a difference between an allowed latest packet transmission time of the transmit end of the TSN stream and an allowed earliest packet transmission time of the transmit end of the TSN stream, and maximum buffer duration supported by the transmit end of the TSN stream.

5. The method according to claim 2, wherein the buffer duration comprises the actual buffer duration, and the method further comprises:

receiving, by the centralized user configuration function, second configuration information from the centralized network configuration function, wherein the second configuration information indicates a packet transmission time of the transmit end of the TSN stream; and

the determining, by the centralized user configuration function, the buffer duration comprises:

determining, by the centralized user configuration function, that the actual buffer duration is duration of a difference between the packet transmission time indicated by the second configuration information and an allowed earliest packet transmission time of the transmit end of the TSN stream.

6. The method according to claim 5, wherein if the packet transmission time indicated by the first configuration information is different from the packet transmission time indicated by the second configuration information, the method further comprises:

determining, by the centralized user configuration function based on the CN PDB and updated actual buffer duration, an updated allowed maximum latency of the TSN stream, wherein the updated maximum latency does not exceed a difference obtained by subtracting the updated actual buffer duration from the CN PDB, and the updated actual buffer duration is duration of a difference between the packet transmission time indicated by the first configuration information and the earliest packet transmission time;

sending, by the centralized user configuration function, second latency information to the centralized network configuration function, wherein the second latency information indicates the updated maximum latency;

receiving, by the centralized user configuration function, third configuration information from the centralized network configuration function, wherein the third configuration information indicates a packet transmission time of the transmit end of the TSN stream, and the packet transmission time indicated by the third configuration information is determined based on the updated maximum latency; and

sending, by the centralized user configuration function, the third configuration information to the transmit end of the TSN stream.

7. The method according to claim 6, wherein the updated actual buffer duration is greater than the actual buffer duration.

8. The method according to claim 5, wherein the packet transmission time indicated by the first configuration information is the same as the packet transmission time indicated by the second configuration information, and the method further comprises:

sending, by the centralized user configuration function, first information to the centralized network configuration function based on the packet transmission time indicated by the second configuration information, wherein the first information indicates the earliest packet transmission time and an allowed latest packet transmission time of the transmit end of the TSN stream, and the earliest packet transmission time and the latest packet transmission time each are the same as the packet transmission time indicated by the second configuration information.

9. The method according to any one of claims 1 to 8, wherein the packet transmission time indicated by the first configuration information is between an allowed earliest packet transmission time of the transmit end of the TSN stream and an allowed latest packet transmission time of the transmit end of the TSN stream, and the method further comprises:

sending, by the centralized user configuration function, first information to the centralized network configuration function based on a maximum buffer duration supported by the transmit end of the TSN stream, wherein the first information indicates the earliest packet transmission time and the latest packet transmission time, and duration of a difference between the latest packet transmission time and the earliest packet transmission time does not exceed the maximum buffer duration supported by the transmit end of the TSN stream.

10. The method according to claim 9, wherein the method further comprises:

receiving, by the centralized user configuration function, capability information from the transmit end of the TSN stream, wherein the capability information indicates the maximum buffer duration supported by the transmit end of the TSN stream.

11. The method according to any one of claims 1 to 10, wherein the determining, by the centralized user configuration function based on the CN PDB and the buffer duration, the allowed maximum latency of the TSN stream transmitted between the access network device and the user plane network element comprises:

determining, by the centralized user configuration function, the maximum latency based on the CN PDB, the buffer duration, and residence duration at the user plane network element, wherein the maximum latency does not exceed a difference obtained by subtracting a sum of the buffer duration and the residence duration from the CN PDB.

12. The method according to any one of claims 1 to 11, wherein the method further comprises:

receiving, by the centralized network configuration function, the first latency information from the centralized user configuration function; and

sending, by the centralized network configuration function, the first configuration information to the centralized user configuration function.

13. The method according to any one of claims 1 to 11, wherein the method further comprises:
determining, by the centralized network configuration function, the first configuration information based on the first latency information.

14. An apparatus, configured to perform the method according to any one of claims 1 to 11.

15. A communication apparatus, comprising at least one processor, wherein the at least one processor is configured to be coupled to a memory, and read and execute instructions in the memory, to implement the method according to any one of claims 1 to 11.

16. The communication apparatus according to claim 15, further comprising the memory.

17. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program; and when the computer program is executed, the method according to any one of claims 1 to 11 is performed.

18. A computer program product comprising instructions, wherein when the computer program product runs on a computer, the computer is enabled to perform the method according to any one of claims 1 to 11.

19. A system, wherein the system comprises a centralized user configuration function and a centralized network configuration function, and wherein the centralized user configuration function is configured to perform the method according to any one of claims 1 to 11, and the centralized user configuration function is configured to:

receive first latency information from the centralized user configuration function; and

send first configuration information to the centralized user configuration function.

20. The system according to claim 19, wherein the centralized user configuration function is further configured to:

determine the first configuration information based on the first latency information.