CLAIMS

1. A server for multimodal network traffic differentiation of application data, the server comprising: at least one memory; and at least one processor coupled with the at least one memory and configured to cause the server to:

receive a multimodal protocol flow from a client, wherein the multimodal protocol flow comprises a multiplex of a plurality of data flows of the application data;

receive a protocol description defining the plurality of data flows in the multiplex of the application data;

receive a request for an application session with traffic differentiation, the application session request comprising at least a representation of the protocol description and a corresponding quality of service (QoS) profile of the multimodal protocol flow;

demultiplex the plurality data flows based at least on the protocol description and the corresponding QoS profile of the multimodal protocol flow; and

map each of the plurality data flows corresponding to the multimodal protocol flow to one or more QoS flows for differentiated traffic handling based at least on the corresponding QoS profile of the multimodal protocol flow.

2. The server of claim 1, wherein at least one of the plurality of data flows of the application data is encrypted.

3. The server of claim 1, wherein the multimodal protocol flow received from the client comprises of at least one of:

a QUIC tunnelling protocol;

a WebRTC protocol;

a combination of: at least one secure real-time protocol (SRTP) media stream, at least one of a real-time protocol (RTP) media stream, a real-time control protocol (RTCP) flow, and a secure real-time control protocol (SRTCP) flow; and

a combination of: at least one SRTP media stream with additionally encrypted RTP header extensions, at least one of a real-time protocol (RTP) media stream, a RTCP flow, and a SRTCP flow.

4. The server of claim 3, whereby the QUIC tunnelling protocol comprises an HTTP extended CONNECT over QUIC and UDP proxying one of:

a UDP connection;

a TCP connection; and

an IP connection to a remote endpoint.

5. The server of any preceding claim, wherein the server comprises a User Plane Function (UPF).

6. The server of any preceding claim, wherein the client comprises an Application Server (AS).

7. The server of any preceding claim, wherein the mapping of each of the plurality data flows corresponding to the multimodal protocol flow to one or more QoS flows for differentiated traffic handling is further based on configuration rules provided by a Session Management Function (SMF).

8. The server of any preceding claim, wherein the demultiplexing of the plurality data flows is further based on a network QoS policy; and wherein the mapping of each of the plurality data flows corresponding to the multimodal protocol flow to one or more QoS flows for differentiated traffic handling is further based on the network QoS policy.

9. The server of claim 8, wherein the network QoS policy is based at least on one of:

a Policy Control Function (PCF) within the network;

a Service Level Agreement (SLA); and

a Mobile Network Operator (MNO) Operations, Administration and Maintenance (OAM) network configuration.

10. The server of any preceding claim, wherein the mapping of each of the plurality data flows to the one or more QoS flows comprises each of the plurality data flows being mapped to one QoS flow.

11. The server of any preceding claim, wherein the one or more QoS flows are associated to an application session, the application session for the application data, and wherein network traffic differentiation is based on at least one of:

a multimodal application identifier

a multimodal session identifier

a multimodal service identifier

a multimodal protocol 5-tuple descriptor corresponding to a source IP address, a destination IP address, a source network port, a destination network port, and a protocol flow identifier.

12. A method for multimodal network traffic differentiation of application data, the method performed by a server and the method comprising:

receiving a multimodal protocol flow from a client, wherein the multimodal protocol flow comprises a multiplex of a plurality of data flows of the application data;

receiving a protocol description defining the plurality of data flows in the multiplex of the application data;

receiving a request for an application session with traffic differentiation, the application session request comprising at least a representation of the protocol description and a corresponding QoS profile of the multimodal protocol flow;

demultiplexing the plurality data flows based at least on the protocol description and the corresponding QoS profile of the multimodal protocol flow; and

mapping each of the plurality data flows corresponding to the multimodal protocol flow to one or more QoS flows for differentiated traffic handling based at least on the corresponding QoS profile of the multimodal protocol flow.

13. A client for multimodal network traffic differentiation of application data, the client comprising: at least one memory; and at least one processor coupled with the at least one memory and configured to cause the client to:

send a multimodal protocol flow to a server, wherein the multimodal protocol flow comprises a multiplex of a plurality of data flows of the application data;

send a protocol description defining the plurality of data flows in the multiplex of the application data;

send a request for an application session with traffic differentiation, the application session comprising at least a representation of the protocol description and a corresponding quality of service (QoS) profile of the multimodal protocol flow.

14. The client of claim 13, wherein at least one of the plurality of data flows of the application data is encrypted.

15. The client of claim 13, wherein the multimodal protocol flow sent to the server comprises of at least one of:

a QUIC tunnelling protocol;

a WebRTC protocol;

a combination of: at least one secure real-time protocol (SRTP) media stream, at least one of a real-time protocol (RTP) media stream, a real-time control protocol (RTCP) flow, and a secure real-time control protocol (SRTCP) flow; and

a combination of: at least one SRTP media stream with additionally encrypted RTP header extensions, at least one of a real-time protocol (RTP) media stream, a RTCP flow, and a SRTCP flow.

16. The client of claim 15, whereby the QUIC tunnelling protocol comprises an HTTP extended CONNECT over QUIC and UDP proxying one of

a UDP connection;

a TCP connection; and

an IP connection

to a remote endpoint.

17. The client of any of claims 13 to 16, wherein the server comprises a User Plane Function (UPF).

18. The client of any of claims 13 to 17, wherein the client comprises an Application Server (AS).

19. The client of any of claims 13 to 18, wherein the representation of the protocol description and the corresponding QoS profile of the multimodal protocol flow comprise QoS configuration rules provided by a Session Management Function (SMF).

20. The client of any of claims 13 to 19, wherein one or more QoS flows are associated to an application session, the application session for the application data, and wherein network traffic differentiation is based on at least one of:

a multimodal application identifier

a multimodal session identifier

a multimodal service identifier

a multimodal protocol 5-tuple descriptor corresponding to a source IP address, a destination IP address, a source network port, a destination network port, and a protocol flow identifier.