CLAIMS

1. A communications system for providing data communication to a vehicle, the communications system comprising:

a mobile transport layer proxy located on the vehicle;

a parent transport layer proxy located remote from the vehicle;

the mobile transport layer proxy being configured to:

accept a transport layer connection with a host device, the transport layer connection being addressed to a remote server; and

communicate with the parent transport layer proxy via multiple paths using a multipath transport layer protocol to communicate on behalf of the host device whilst identifying as the mobile transport layer proxy; and

the parent transport layer proxy being configured to:

communicate with the mobile transport layer proxy using the multipath transport layer protocol; and

communicate with the remote server whilst identifying as the parent transport layer proxy to communicate on behalf of the mobile transport layer proxy to permit the host device to communicate with the remote server.

2. A communications system as claimed in claim 1, wherein the parent transport layer proxy is configured to accept a connection with the mobile transport layer proxy that is addressed to the remote server.

3. A communications system as claimed in any preceding claim, wherein the parent transport layer proxy is configured to communicate with the mobile transport layer proxy via multiple paths using the multipath transport layer protocol.

4. A communications system as claimed in any preceding claim, wherein the mobile transport layer proxy is configured to accept the transport layer connection with the host device by intercepting a transport layer session originating from the host device that is addressed for the remote server.

5. A communications system as claimed in claim 4, wherein the mobile transport layer proxy is configured to accept the transport layer connection with the host

device by masquerading as the remote server and terminating the transport layer session originating from the on-board device at the mobile transport layer proxy.

6. A communications system as claimed in any preceding claim, wherein the parent transport layer proxy is configured to intercept a transport layer session originating from the mobile transport layer proxy that is addressed for the remote server.

7. A communications system as claimed in claim 6, wherein the parent transport layer proxy is configured to masquerade as the remote server and terminates the transport layer session originating from the mobile transport layer session at the parent transport layer proxy.

8. A communications system as claimed in any preceding claim, wherein the mobile transport layer proxy is connected to a plurality of radio transceivers, each radio transceiver is configured to establish a respective wireless data connection to equipment located remote from the vehicle independently of the other radio transceivers, and each one of the data connections is one of the multiple paths.

9. A communications system as claimed in claim 8, wherein the plurality of radio transceivers are located on the vehicle.

10. A communications system as claimed in claim 8 or 9, wherein each radio transceiver establishes the respective data connection with a different base station located remote from the vehicle.

11. A communications system as claimed in any of claims 8 to 10, wherein the base station comprise one of a number of wayside base station next to a path taken by the vehicle.

12. A communications system as claimed in claim 11, wherein the vehicle is a train and the path taken by the vehicle is a railway track.

13. A communications system as claimed in any of claims 10 to 12, wherein the base station are wireless base stations.

14. A communications system as claimed in any of claims 10 to 13, wherein the base station are cellular base stations.

15. A communications system as claimed in any preceding claim as dependent on claim 8, the communication system comprising a mobile router located on the vehicle, the mobile router comprising the plurality of radio transceivers.

16. A communications system as claimed in claim 15, wherein the mobile transport layer proxy forms part of the mobile router and the mobile router communicates with the parent transport layer proxy via multiple paths using the multipath transport layer protocol.

17. A communications system as claimed in any preceding claim, wherein at least one separate subconnection of the multipath transport layer protocol is established over each of the multiple paths.

18. A communications system as claimed in claim 17, wherein a separate subconnection of the multipath transport layer protocol is established over each of the multiple paths.

19. A communications system as claimed in claim 17 or 18, the mobile transport layer proxy being configured to divide a data stream for transmission to the parent transport layer proxy in to a number of substreams at least equal to the number of paths and send a duplicated or different substream over each of the subconnections.

20. A communications system as claimed in any of claims 17 to 19, wherein the mobile transport layer proxy is configured to divide a data stream for transmission to the parent transport layer proxy in to a number of substreams equal to the number of paths and send a different substream over each of the subconnections.

21. A communications system as claimed in claim 19 or 20, wherein the substreams are formed of data packets and the mobile transport layer proxy is configured to incorporate a data stream identifier in to each data packet, the data stream identifier indicating the position of the data packet in the data stream.

22. A communications system as claimed in any preceding claim, wherein the multipath transport layer protocol is Multipath Transmission Control Protocol (MPTCP).

23. A communications system as claimed in claim 22 as dependent on claim 17, wherein the separate subconnections are separate subflows of the MPTCP.

24. A communications system as claimed in claim 23 as dependent on claim 21, wherein the data stream identifiers are data sequence numbers.

25. A communications system as claimed in any preceding claim, wherein the parent transport layer proxy does not move with the vehicle.

26. A communications system as claimed in any preceding claim, wherein the position of the mobile transport layer proxy is fixed relative to the vehicle.

27. A communications system as claimed in any preceding claim, wherein the mobile transport layer proxy connects to the host device via a wireless connection.