Claims

1. A first network node, comprising:

at least one memory; and

at least one processor coupled with the at least one memory and configured to cause the first network node to:

receive a requirement for performance analytics of an application session comprising an end-to-end communication session that includes a tethered connection;

identify at least one device to serve as a data collection entity for collecting data for the performance analytics;

send a data collection requirement to the data collection entity, the data collection requirement including a request for performance data related to the tethered connection within the application session;

receive, from the data collection entity, the performance data measured in accordance with the data collection requirement;

derive the performance analytics based on the performance data and the data collection requirement; and

send the derived performance analytics.

2. The first network node of claim 1, wherein to receive the requirement for performance analytics comprises the at least one processor configured to cause the first network node to receive a subscription request from an analytics consumer.

3. The first network node of claim 1 or 2, wherein the requirement for performance analytics comprises at least one of:

an analytics event identity;

at least one target vertical application layer (VAL) user equipment (UE) identity;

a group identifier consisting of one or more tethering device identities and one or more tethered device identities;

information on one or more of a capability or access technology for the tethered connection;

positioning information associated with a target VAL UE identity;

a VAL session identity associated with the target VAL UE identity;

a VAL service identity associated with the target VAL UE identity;

a period of time for which measurements are collected;

a definition of an area for which the measurements are collected;

a confidence level of any derived performance analytics; or

an exposure level for providing analytics related to the tethered connection.

4. The first network node of any preceding claim, wherein the at least one processor is further configured to cause the first network node to select at least one data source for collection of data by the data collection entity**.**

5. The first network node of any preceding claim, wherein the performance data comprises one or more of historical data or real-time data.

6. The first network node of any preceding claim, wherein the data collection requirement comprises a subscription to at least one data source.

7. The first network node of any preceding claim, wherein the application session comprises at least one of an extended reality session, a mobile metaverse session, or an artificial intelligence application session.

8. The first network node of any preceding claim, wherein the performance analytics comprise at least one of:

statistics or predictions for a communication delay of the tethered connection;

the statistics or the predictions for an end-to-end delay considering the tethered connection as well as other segments in the end-to-end communication session; or

a determination as to whether a quality of service for the tethered connection is sustainable for a given session or time period.

9. The first network node of any preceding claim, wherein the performance analytics are sent to an application server or to a network unit.

10. A method performed by a first network node, the method comprising:

receiving a requirement for performance analytics of an application session comprising an end-to-end communication session that includes a tethered connection;

identifying at least one device to serve as a data collection entity for collecting data for the performance analytics;

sending a data collection requirement to the data collection entity, the data collection requirement including a request for performance data related to the tethered connection within the application session;

receiving, from the data collection entity, the performance data measured in accordance with the data collection requirement;

deriving the performance analytics based on the performance data and the data collection requirement; and

sending the derived performance analytics.

11. The method of claim 10, wherein the receiving the requirement for performance analytics comprises receiving a subscription request from an analytics consumer.

12. The method of claim 10 or 11, further comprising: selecting at least one data source for collection of data by the data collection entity.

13. The method of any of claims 10 to 12, wherein the data collection requirement comprises a subscription to at least one data source.

14. The method of any of claims 10 to 13, wherein the performance analytics comprise at least one of:

statistics or predictions for a communication delay of the tethered connection;

the statistics or the predictions for an end-to-end delay considering the tethered connection as well as other segments in the end-to-end communication session; or

a determination as to whether a quality of service for the tethered connection is sustainable for a given session or time period.

15. A second network node, comprising:

at least one memory; and

at least one processor coupled with the at least one memory and configured to cause the second network node to:

receive a data collection requirement from a first network node, the data collection requirement for performance analytics of an application session comprising an end-to-end communication session that includes a tethered connection;

determine at least one data source based on the data collection requirement;

collect performance data from the at least one data source based on the data collection requirement; and

send the collected performance data to the first network node.

16. The second network node of claim 15, wherein the at least one processor is further configured to cause the second network node to process the collected performance data before sending it to the first network node.

17. The second network node of claim 15 or 16, wherein the at least one processor is further configured to cause the second network node to:

determine if the collected performance data is sufficient to satisfy the data collection requirement; and

if the collected performance data is not sufficient to satisfy the data collection requirement, then request supplementary data.

18. The second network node of any of claims 15 to 17, wherein the performance data comprises an indication of a communication delay in the tethered connection.

19. The second network node of any of claims 11 to 14, wherein to collect the performance data comprises the at least one processor configured to cause the second network to at least one of:

request end-to-end delay past measurements from an application client;

estimate a maximum latency and a minimum latency given non-line of sight and line of sight and using a relative location of end points of the tethered connection;

capture when a delay for the tethered connection exceeds a packet delay budget; or

perform local analytics based on a location of a tethered device, a communication technology used for the tethered connection, and a local environment and a time of day.

20. A method performed by a second network node, the method comprising:

receiving a data collection requirement from a first network node, the data collection requirement for performance analytics of an application session comprising an end-to-end communication session that includes a tethered connection;

determining at least one data source based on the data collection requirement;

collecting performance data from the at least one data source based on the data collection requirement; and

sending the collected performance data to the first network node.