

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference N3203324WOP00Mm	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP2018/077699	International filing date (day/month/year) 11.10.2018	Priority date (day/month/year) 13.10.2017	
International Patent Classification (IPC) or national classification and IPC INV. H04L29/08			
Applicant Nokia Technologies Oy			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ (sent to the applicant and to the International Bureau) a total of <u>16</u> sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned conclusion under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☒ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application			
Date of submission of the demand 13.08.2019		Date of completion of this report 09.10.2019	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465		Authorized officer Koch, György Telephone No. +49 89 2399-7679 	

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2018/077699

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-42 as originally filed

Claims, Numbers

1-34 filed in electronic form on 13-08-2019

Drawings, Sheets

1/9-9/9 as originally filed

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2018/077699

6. ☒ With regard to top-up searches (Rules 66.1 *ter* and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 23.09.2019 (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
 - ☐ Additional relevant documents have been discovered during the top-up search.
 - ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded".

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-34</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-34</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-34</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following document:

D1: US 2014/233380 A1 (KIM HYUNSOOK [KR] ET AL) 21 August 2014
(2014-08-21)

2 Article 33(2) PCT

2.1 Document **D1**, which is considered to represent the most relevant state of the art, discloses (the references in parentheses applying to this document), a method comprising:

forming, by a user equipment, a message including an indication of at least one session management capability supported by the user equipment, the session management capability being reflective quality of service (see in particular page 9, paragraph 148; page 11, paragraph 173; and figures 12, 16: *calculating, by a processor of a user equipment, information indicating capability of supporting reflecting QoS by the user equipment*);

sending, by the user equipment, the message including the indication towards a session management function (see in particular page 9, paragraph 148; page 11, paragraph 174; and figures 12, 16: *transmitting, by the processor of the user equipment, the calculated information indicating capability of supporting reflecting QoS by the user equipment to a network node*);

and receiving, by the user equipment and from the session management function, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the user equipment to operate in accordance with the at least one session management capability (see in particular page 9, paragraphs 149, 150; page 11, paragraphs 174, 175; and figures 12, 16: *receiving, by the processor of the user equipment and from the network node, an indication whether the reflective QoS should be applied based on an evaluation whether the reflective QoS is supported by the network node*).

The subject-matter of claim 1 differs from that disclosed in document D1 in that the message including the indication of the at least one session management capability supported by the user equipment is a session establishment message as well as the response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability includes at least one quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.

Therefore, the subject-matter of **claim 1** is new in the sense of Article 33(2) PCT.

- 2.2 Furthermore, the above considerations with respect to novelty of claim 1 are equally applicable to **claims 11 and 21** that disclose the same combination of the features of claim 1 in terms of an apparatus (i.e. an apparatus adapted to perform the steps of method claim 1) and a computer-readable medium (i.e. a non-transitory computer-readable medium including program code which, when executed by a computer, causes the computer to perform the steps of method claim 1).

Therefore, the subject-matter of **claims 11 and 21** is also new in the sense of Article 33(2) PCT.

- 2.3 In addition, although the subject-matter of **claims 22, 28 and 34** relates to the features of a session management function in terms of a method, apparatus and a computer-readable medium, these claims disclose a reception of the above session establishment message as well as a transmission of the above response including the at least one quality of service rule authorized for the user equipment and the timer value for the timer associated with the reflective quality of service. Hence, the above considerations with respect to novelty of claims 1, 11 and 21 are equally applicable to these claims.

Therefore, the subject-matter of **claims 22, 28 and 34** is also new in the sense of Article 33(2) PCT.

3 Article 33(3) PCT

By using a session establishment message for indicating whether a user equipment supports reflective quality of service and including quality of service rules and a timer value for the timer associated with the reflective quality of service in a response message transmitted from a session management function to the user equipment, support of the reflective quality of service and respective quality of service rules and parameters associated with the reflective quality of service are indicated and exchanged in an efficient way between the user equipment and the session management function. Although document D1 describes the steps of indicating support of the reflective quality of service by the user equipment and indicating to the user equipment whether the reflective quality of service is to be applied, the first indication is transmitted from the user equipment to a 3GPP AAA server during an authentication process of the user equipment that teaches away the skilled person from using a session establishment message for transmitting the first indication. Moreover, the second indication merely informs the user equipment that the user equipment should use or should not use the reflective quality of service function and document D1 does not provide any further technical details concerning the content of the second indication. Therefore, document D1 does not provide any hint to the skilled person to apply the above distinguishing features to efficiently indicate support or reflective quality of service and exchange corresponding quality of service rules and parameters between the user equipment and the session management function, and the present invention is considered as being not **obvious** for the person skilled in the art.

As a consequence, the subject-matter of **claims 1, 11, 21, 22, 28 and 34** involves an inventive step in the sense of Article 33 PCT.

- 4 Moreover, the additional features of **claims 2-10, 12-20, 23-27 and 29-33** contain further details on the subject-matter of independent claims 1, 11, 22 and 28. These dependent claims merely limit the scope of protection sought by the independent claims and are also considered to fulfill the requirements of the PCT with respect to novelty and inventive step (Article 33(1)-(3) PCT).

Re Item VII

Certain defects in the international application

- 1 The independent claims are not correctly cast in the two part form (Rule 6.3(b) PCT).
- 2 The claims do not contain reference signs placed in parentheses (Rule 6.2(b) PCT).
- 3 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the most relevant prior art, i.e. document D1, is neither acknowledged by reference, nor briefly discussed in the introductory part of the description.

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Ihr Zeichen / Your Ref.:

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Ah/mG

Datum / Date:
13 August 2019

International Application PCT/EP2018/077699
Applicant: Nokia Technologies OY

REQUEST FOR INTERNATIONAL PRELIMINARY EXAMINATION UNDER ART. 31 PCT

A. Request

We herewith file a request for International Preliminary Examination and it is requested to take the following argumentation in response to the Written Opinion of the International Searching Authority into account during examination and when establishing the International Preliminary Examination Report (IPRP).

The applicant would like to comment on the assessments set out in the Written Opinion of the International Search Authority accompanying the International Search Report.

B. Response to the Written Opinion of the International Searching Authority

1. Enclosed documents

Enclosed is an amended set of claims (claims 1 to 34, "clean copy"). In order to facilitate the examination procedure, a marked-up copy is also enclosed in which the amendments relative to the claims on file are identified.

2. Basis for establishing IPRP

It is hereby requested to take into account during examination and establish the IPRP on the basis of the following documents:

Claims, Numbers 1 to 34:	as enclosed ("clean copy");
Description, Pages 1 to 42:	as published;
Drawings, Sheets 1/18 to 18/18:	as published.

3. Explanation of the amendments

The amended claims are based on the claims as originally filed; however, amendments have been made to emphasize the features of the present invention and distinguish it from the cited reference more clearly.

To be more specific, amended claim 1 is based on claim 1 as originally filed which has been amended so as to define:

- *"the session management capability being reflective quality of service"* in accordance with e.g. claim 4 as originally filed, first feature thereof, and paragraphs [0022], [0026], [0053], [0060]-[0063] in conjunction with Fig. 2A;
- *"the response includes at least one quality of service rule authorized for the user equipment"* in accordance with e.g. claim 9 as originally filed, second feature, and paragraphs [0101] and [0103] in conjunction with Figs. 4 and 5; and
- the response includes *"a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service"* in accordance with e.g. claim 5 as originally filed, and paragraphs [0056]-[0058], [0062] and [0064].

Amended claims 2 to 4 correspond to claims 2 to 4, respectively, as originally filed, the subject-matter of which remains unchanged; however, for the sake of consistency, the

feature of claim 4 as originally filed which now is incorporated into amended claim 1 has been cancelled.

Amended claim 5 now defines that "*the at least one quality of service rule authorized for the user equipment comprises at least one uplink packet filter*" in accordance with e.g. paragraphs [0072], [0101] and [0103] in conjunction with Figs. 4 and 5.

Amended claims 6 to 10 correspond to claims 6 to 10, respectively, as originally filed, the subject-matter of which remains unchanged; however, for the sake of consistency, the feature of claim 9 as originally filed which now is incorporated into amended claim 1 has been cancelled and dependencies have been adapted.

Amended claim 11 is based on claim 11 as originally filed which has been amended so as to correspond to amended claim 1. Support can be found in claims 14, 15, and 19 as originally filed, and also in the description as already provided above with respect to amended claim 1.

Amended claims 12 to 14 correspond to claims 12 to 14, respectively, as originally filed, the subject-matter of which remains unchanged; however, for the sake of consistency, the feature of claim 14 as originally filed which now is incorporated into amended claim 11 has been cancelled.

Amended claim 15 has been defined so as to correspond to amended claim 5. Support can be found in the description as provided above with respect to amended claim 5.

Amended claims 16 to 20 correspond to claims 16 to 20, respectively, as originally filed, the subject-matter of which remains unchanged; however, for the sake of consistency, the feature of claim 19 as originally filed which now is incorporated into amended claim 11 has been cancelled and dependencies have been adapted.

Amended claim 21 is based on claim 21 as originally filed which has been amended so as to correspond to amended claim 1. Support can also be found in the description as already provided above with respect to amended claim 1.

Amended claim 22 is based on claim 24 as originally filed which has been amended so as to correspond to amended claim 1. Support can be found in claim 27 as originally filed, and also in the description as already provided above with respect to amended claim 1.

Amended claims 23 to 27 correspond to claims 25 to 29, respectively, as originally filed, the subject-matter of which remains unchanged; however, for the sake of consistency, the feature of claim 27 as originally filed which now is incorporated into amended claim 22 has been cancelled.

Amended claim 28 is based on claim 30 as originally filed which has been amended so as to correspond to amended claim 1. Support can be found in claims 33 and 35 as originally filed, and also in the description as already provided above with respect to amended claim 1.

Amended claims 29 to 33 correspond to claims 31 to 35, respectively, as originally filed, the subject-matter of which remains unchanged; however, for the sake of consistency, the features of claim 33 and 35 as originally filed which now are incorporated into amended claim 28 have been cancelled.

Amended claim 24 is based on claim 36 as originally filed which has been amended so as to correspond to amended claim 1. Support can also be found in the description as already provided above with respect to amended claim 1.

The amended claims are supported by the application as originally filed. Accordingly, no new matter has been introduced into the application.

4. Inventive Step (Re Item V)

The Written Opinion of the International Searching Authority already stated that the subject-matter of claim 1 as originally differs from that disclosed in cited reference D1 (US 2014/233380 A1) in that the message including the indication of the at least one session management capability supported by the user equipment is a session establishment message. Although the Written Opinion considered this difference to be "*a minor design variation relating to one of a plurality of options how the session management capability of the user equipment might be transmitted from the user equipment to the session management*

function", it should be noted that in reference D1, for example in Figure 12, the UE sends an *"Indicate on capability of supporting reflective QoS, etc."* message to a 3GPP AAA server and does this as part of an authentication procedure. Authentication is not session establishment and it would not be obvious to the skilled person to take features that are described as being part of authentication and transplant them into session management. To do so would be an arbitrary change of the teaching of reference D1 for which the skilled person does not have any motivation.

Amended claim 1 still defines that it is *"a session establishment message"* which includes the indication of the session management capability supported by the user equipment. Consequently, the subject-matter of amended claim 1 satisfies the novelty requirements of Art. 33(2) PCT.

In addition, amended claim 1 has been amended so as to further include the following features not disclosed by reference D1 (emphasis added):

- *"the response includes at least one quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service"*

In particular, amended claim 1 contains the feature of *"a timer value for a timer associated with the reflective quality of service"* received by the user equipment and from the session management function in a response indicative of whether the session management function and/or the corresponding network supports the session management capability.

With reference to Fig. 12, reference D1 states in paragraph [0150] (and similarly in para. [0176]; emphasis added):

*"In the step S1230, the network node may **inform** the UE of the decision (i.e., whether the reflective QoS is applied) made in step S1220. For instance, the network node may **inform** the UE that the UE should use or should not use the reflective QoS function. Or, the network node may **inform** the UE that the UE activates or inactivates the capability of supporting the reflective QoS."*

That is, reference D1 states that the network is to provide an indication to the user equipment on whether to apply reflective QoS. However, reference D1 is totally silent with respect to

any timer value included in the response with which indication on whether to apply reflective QoS is provided. No details with respect to the indication are given in reference D1.

Moreover, amended claim 1 contains the feature of "*at least one quality of service rule authorized for the user equipment*" received by the user equipment and from the session management function in the response. As already mentioned above, reference D1 does not provide details with respect to providing the indication on whether to apply reflective QoS and in particular is silent with respect to any QoS rule provided to the user equipment together with, or as part of, the indication. In general, there is no disclosure with respect to QoS rules provided by the network node to the user equipment and/or applied by the user equipment at all.

In the absence of such features in reference D1, amended claim 1 would not be obvious to the skilled person with respect to reference D1. That is, the skilled person, starting out from reference D1 would not conclude in an obvious way that reference D1 should be modified to include all of the features now present in amended claim 1.

Indeed, starting from reference D1, the skilled person is not provided with any teaching as to indicate whether to apply reflective QoS by using "*a timer value for a timer associated with the reflective quality of service*" which indicates support of reflective QoS. Thus, no explicit signalling for support of the user equipment's requested session management capability (e.g., reflective QoS) is required, but an implicit indication based on providing "*a timer value for a timer associated with the reflective quality of service*" is used. No hints are given in reference D1 towards an implicit indication.

In addition, no hint at all is provided to the skilled person to include "*at least one quality of service rule authorized for the user equipment*" in the indication on whether to apply reflective QoS. This allows to provide at least one quality of service rule to the user equipment in an efficient way, namely together with the indication of support for reflective QoS using the timer value. The at least one quality of service rule which may be applied by the user equipment e.g. when the network stops marking downlink packets and thereby indicates to not apply reflective QoS any longer does not need to be signalled separately. Reference D1 is concerned with reflective QoS only but does not disclose to provide any quality of service rules to the user equipment by way of signalling, particularly not together

with the indication on whether to apply reflective QoS. The skilled person is therefore not provided with teaching and has no motivation to provide "*at least one quality of service rule authorized for the user equipment*" together with the indication on whether to apply reflective QoS.

Accordingly, having regard to the state of the art, amended claim 1 would not be obvious to the skilled person skilled in view of reference D1, and therefore amended claim 1 satisfies the inventive step requirement of Article 33(3) PCT. Reconsideration and further examination are respectfully requested.

The above applies *mutatis mutandis* to amended claims 11, 21, 22, 28, and 34, which all comprise features corresponding to those of amended claim 1. Accordingly, having regard to the state of the art, amended claims 11, 21, 22, 28, and 34 would not be obvious to the skilled person in view of reference D1, and therefore satisfy the inventive step requirement of Article 33(3) PCT, and consequently the novelty requirement of Article 33(2) PCT. Reconsideration and further examination are respectfully requested.

5. Certain defects (Re Item VII)

The applicant notes the comments that the independent claims are not in the two-part form, the claims do not contain reference signs placed in parentheses, and reference D1 is neither acknowledged by reference, nor briefly discussed in the introductory part of the description.

In view of differing jurisdictions and practice by national patent offices, the applicant will deal appropriately with these matters in the national phases.

6. Certain observations (Re Item VII)

Claims 22 and 37 have been cancelled without prejudice. The amended claims are therefore regarded as to meet the requirements of Art. 6 PCT concerning conciseness.

* * *

The absence of a reply to a specific rejection, issue, or comment does not signify agreement with or concession of that rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be other reasons for patentability of any or all amended claims that have not been expressed. Finally, nothing in this letter should be construed as an intent to concede any issue with regard to any amended claim, except as specifically stated in this letter, and the amendment or cancellation of any amended claim does not necessarily signify concession of unpatentability of the claim prior to its amendment or cancellation.

It is therefore kindly requested to reconsider the findings in the Written Opinion and to acknowledge that the subject-matter of the present invention meets the requirements of Article 33(1) PCT and to issue a corresponding International Preliminary Report on Patentability.

As a precaution only, it is respectfully requested not to issue a negative International Preliminary Report on Patentability without giving to the applicant the opportunity for an informal interview according to Rule 66.6 PCT or to submit further amendments or arguments under Rule 66.4(b) PCT.



Alexander Münster-Horstkotte

Enc.

- amended set of claims 1 to 34 (clean and marked-up copy).

WHAT IS CLAIMED

1. A method comprising:

forming, by a user equipment, a session establishment message including an indication of at least one session management capability supported by the user equipment, the session management capability being reflective quality of service;

sending, by the user equipment, the session establishment message including the indication towards a session management function ; and

receiving, by the user equipment and from the session management function, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the user equipment to operate in accordance with the at least one session management capability, wherein the response includes at least one quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.
2. The method of claim 1, wherein the session establishment message comprises a packet data unit session establishment request, wherein the session establishment message includes the indication, a packet data unit session identifier, and a packet data unit type.
3. The method of any of claims 1-2, wherein the indication comprises an information element comprising at least one bit, wherein a value of the at least one bit indicates whether the at least one session management capability is supported by the user equipment.
4. The method of any of claims 1-3, wherein the value of the at least one bit indicates whether the reflective quality of service is supported by the user equipment.

5. The method of any of claims 1-4, wherein the at least one quality of service rule authorized for the user equipment comprises at least one uplink packet filter.

6. The method of any of claims 1-5 further comprising:
receiving, by the user equipment, at least one downlink packet marked to indicate that the at least one packet is subject to the reflective quality of service; and
deriving, by the user equipment and based on the at least one downlink packet, at least one quality of service rule for use on at least one uplink packet.

7. The method of any of claims 1-5 further comprising:
receiving, by the user equipment, at least one downlink packet not marked to indicate that the at least one packet is subject to the reflective quality of service; and
removing, by the user equipment, at least one quality of service rule, when the timer expires.

8. The method of any of claims 1-7, wherein the response includes a packet data unit session establishment accept.

9. The method of any of claims 1-8, wherein the response includes session management information.

10. The method of any of claims 1-9, wherein the session management information and/or the at least one quality of service rule are carried by at least one information element.

11. An apparatus comprising:
at least one processor; and

at least one memory including computer program code, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to at least:

form a session establishment message including an indication of at least one session management capability supported by the apparatus, the session management capability being reflective quality of service;

send the session establishment message including the indication towards a session management function; and

receive, from the session management function, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the apparatus to operate in accordance with the at least one session management capability, wherein the response includes at least one quality of service rule authorized for the apparatus and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.

12. The apparatus of claim 11, wherein the session establishment message comprises a packet data unit session establishment request, wherein the session establishment message includes the indication, a packet data unit session identifier, and a packet data unit type.

13. The apparatus of any of claims 11-12, wherein the indication comprises an information element comprising at least one bit, wherein a value of the at least one bit indicates whether the at least one session management capability is supported by the apparatus.

14. The apparatus of any of claims 11-13, wherein the value of the at least one bit indicates whether the reflective quality of service is supported by the apparatus.

15. The apparatus of any of claims 11-14, wherein the at least one quality of service rule authorized for the apparatus comprises at least one uplink packet filter.

16. The apparatus of any of claims 11-15, wherein the apparatus is further caused to at least receive at least one downlink packet marked to indicate that the at least one packet is subject to the reflective quality of service; and derive, based on the at least one downlink packet, at least one quality of service rule for use on at least one uplink packet.

17. The apparatus of any of claims 11-15 wherein the apparatus is further caused to at least at least receive at least one downlink packet not marked to indicate that the at least one packet is subject to the reflective quality of service; and remove at least one quality of service rule, when the timer expires.

18. The apparatus of any of claims 11-17, wherein the response includes a packet data unit session establishment accept.

19. The apparatus of any of claims 11-18, wherein the response includes session management information.

20. The apparatus of claim 19, wherein the session management information and/or the at least one quality of service rule are carried by at least one information element, wherein the apparatus comprises a user equipment.

21. A non-transitory computer-readable medium including program code which when executed causes operations comprising:

forming, by a user equipment, a session establishment message including an indication of at least one session management capability supported by the user equipment, the session management capability being reflective quality of service;

sending, by the user equipment, the session establishment message including the indication towards a session management function; and

receiving, by the user equipment and from the session management function, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the user equipment to operate in accordance with the at least one session management capability, wherein the response includes at least one quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.

22. A method comprising:

receiving, at a session management function node and from a user equipment, the session establishment message including an indication of at least one session management capability supported by the user equipment, the session management capability being reflective quality of service; and

sending, by the session management function node and to the user equipment, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the user equipment to operate in accordance with the at least one session management capability, wherein the response includes at least one quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.

23. The method of claim 22, wherein the session establishment message comprises a packet data unit session establishment request, wherein the session establishment message includes the indication, a packet data unit session identifier, and a packet data unit type.

24. The method of any of claims 22-23, wherein the indication comprises an information element comprising at least one bit, wherein a value of the at least one bit indicates whether the at least one session management capability is supported by the user equipment.

25. The method of any of claims 22-24, wherein the value of the at least one bit indicates whether the reflective quality of service is supported by the user equipment.

26. The method of any of claims 22-25, wherein the response includes a packet data unit session establishment accept.

27. The method of any of claims 22-26, wherein the response includes session management information, at least one quality of service rule authorized for the apparatus, and/or at least one capability parameter.

28. An apparatus comprising:
at least one processor; and
at least one memory including computer program code, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to at least:

receive, at the apparatus and from a user equipment, the session establishment message including an indication of at least one session management capability supported by the user equipment, the session management capability being reflective quality of service; and

send, by the apparatus and to the user equipment, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the user equipment to operate in accordance with the at least one session management capability, wherein the response includes at least one

quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.

29. The apparatus of claim 28, wherein the session establishment message comprises a packet data unit session establishment request, wherein the session establishment message includes the indication, a packet data unit session identifier, and a packet data unit type.

30. The apparatus of any of claims 28-29, wherein the indication comprises an information element comprising at least one bit, wherein a value of the at least one bit indicates whether the at least one session management capability is supported by the user equipment.

31. The apparatus of any of claims 28-30, wherein the value of the at least one bit indicates whether the reflective quality of service is supported by the user equipment.

32. The apparatus of any of claims 28-31, wherein the response includes a packet data unit session establishment accept.

33. The apparatus of any of claims 28-32, wherein the response includes session management information and/or at least one capability parameter.

34. A non-transitory computer-readable medium including program code which when executed causes operations comprising:

receiving, at a session management function node and from a user equipment, the session establishment message including an indication of at least one session management capability supported by the user equipment, the session management capability being reflective quality of service; and

sending, by the session management function node and to the user equipment, a response indicative of whether the session management function and/or a corresponding network supports the at least one session management capability to enable the user equipment to operate in accordance with the at least one session management capability, wherein the response includes at least one quality of service rule authorized for the user equipment and a timer value for a timer associated with the reflective quality of service, the timer value being indicative of whether the session management function supports the reflective quality of service.