

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 2013p01894wo	FOR FURTHER ACTION	See item 4 below
International application No. PCT/EP2014/060322	International filing date (<i>day/month/year</i>) 20 May 2014 (20.05.2014)	Priority date (<i>day/month/year</i>)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant NOKIA SOLUTIONS AND NETWORKS OY		

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report 22 November 2016 (22.11.2016)
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2014/060322

International filing date (day/month/year)
20.05.2014

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
INV. H04L29/06

Applicant
NOKIA SOLUTIONS AND NETWORKS OY

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- 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 statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and 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


2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of this opinion

see form
PCT/ISA/210

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - 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 (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - on paper
 - in electronic form
 - b. (time)
 - in the international application as filed
 - together with the international application in electronic form
 - subsequently to this Authority for the purposes of search
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-28</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-28</u>
Industrial applicability (IA)	Yes: Claims	<u>1-28</u>
	No: Claims	

2. Citations and explanations

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

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

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 documents:

D1 US 2007/206620 A1

D2 MAY EL BARACHI ET AL: "Context-Aware Signaling for Call Differentiation in IMS-Based 3G Networks", COMPUTERS AND COMMUNICATIONS, 2007. ISCC 2007. IEEE SYMPOSIUM ON, IEEE, PI, 1 July 2007, pages 789-796, ISBN: 978-1-4244-1520-5

D3 US 6 760 309 B1

D4 US 2009/175279 A1

D5 EP 1 686 752 A1

D6 SCHULZRINNE COLUMBIA U J POLK CISCO SYSTEMS H: "Communications Resource Priority for the Session Initiation Protocol (SIP); rfc4412.txt", 20060201, 1 February 2006, ISSN: 0000-0003

D7 US 2005/163126 A1

D8 US 8 238 883 B1

2 **Claim 1** does not meet the requirement of inventive step, Art. 33(3) PCT.

2.1 Document **D1** discloses a method, comprising

- determining usage of a resource at session setup (while D1 is not limited to session setup, it does include this case) with a signaling protocol (paragraphs [46] [50], [51]);
- counting the determined used resources during the session setup (paragraphs [46], [50], [51]);
- increasing a value of a progress counter for overload control based on the counted used resources, wherein the progress counter for overload control is carried in a Session Initiation Protocol messaging (paragraphs [46], [50], [51]; paragraph [53]: *INVITE*); and

- prohibiting, in case of an overload (not only in this case, but in particular in this case; see also paragraph [53]: *lessen congestion*), rejection of messages in the Session Initiation Protocol messaging with a progress counter value higher than a set threshold value (paragraph [53]: *use the priority value to rank the SIP message 10 amongst other received SIP messages*; account should also be taken of the observation made further below under point 6.1).
- 2.2 Claim 1 thus differs from the teaching of D1 by the fact that a set threshold is used as a criterion to decide to prohibit rejection of messages.
- 2.3 The technical problem corresponding to this difference is how to generate classes of messages of different priority.
- 2.4 D1 proposes a single queue of messages where the order of messages within the queue is determined based on the value of the progress counter. While this is one possible approach, alternative approaches are well-known in the art of overload control. For example, **D4** uses priority classes to determine on preferential treatment of SIP messages (D4, paragraphs [48], [50], [52]) where classes may be simply based on grade or may be based on a more complex procedure involving certain metrics. Also **D5** discloses priority class based treatment of SIP requests (paragraphs [35] - [37]). See also **D3**, column 11, lines 19 - 65. It is thus considered obvious to implement priority differentiation by means of thresholds. The subject-matter of claim 1 does therefore not involve an inventive step.
- 3 **Claims 14 and 27** correspond to method claim 1 in terms of an apparatus and a computer program product, respectively, and do also not meet the requirement of novelty.
- 4 The additional features of the **dependent claims** do not appear to add anything of inventive significance because they are either already known from D1 (claims 2 - 4, 7, 8, 11, 12, 15 - 17, 20, 21, 24, 25, 28) or are common measures (claims 5, 6, 9, 10, 13, 18, 19, 22, 23, 26).

More specifically:

- Claims 2, 15: The idea to adapt a prioritization scheme according to a load level is generally known, see for example D2, page 793, left-hand column; D3, column 13, lines 17 - 20; D4, paragraphs [84] - [85]; and is in particular known from D1, see paragraph [58]: *prioritize ... depending on how busy the SIP proxy server 28a is*.

- Claims 3, 4, 16, 17: The accumulation of processing as known from D1 implies counting resources in all network elements along the path of the message. Furthermore, SIP servers are application servers.
- Claims 5, 6, 18, 19: It is a commonly applied principle to simply forward unsupported parameters transparently, see for example D3, column 10, lines 43 - 52; D5, paragraph [40]; D6, section 4.6.2; See also D2, page 793, right-hand column, second paragraph: *S-CSCF1 ... This last ... forwards the INVITE to the callee's S-CSCF (i.e., S-CSCF2), via the local I-CSCF.*
- Claims 7, 20: Incrementing by one essentially amounts to hop counting; a hop count as a particular metric is however already disclosed in D1, see paragraph [50].
- Claims 8, 21: D1 already proposes recording exact processing times, see paragraph [51]: *cumulative amount of processing time expended on the SIP message.*
- Claims 9, 22: Determining a priority value in a manner depending on the load level is for example known from D3, see column 7, lines 18 - 20 and column 10, lines 22 - 26.
- Claims 10, 23: It is known to start overload protection algorithms only when an overload state has been entered, or to run them on a continuous basis. The first approach saves resources but may incur some delay before overload protection measures become effective; the second approach uses more resources but may become effective more quickly. To choose one or the other approach is a simple matter of design choice and does not involve any inventive step. See also document D5, paragraph [35]: *The processing of multimedia priority services carried out by the I-CSCF is the same as that by the P-CSCF and S-CSCF, i.e., it carries out processing according to the conventional flow of the existing technological solution if there are available resources and carries out special processing of the SIP service request when it is congested;* D7, paragraph [14]: *When in a state of congestion, the call processing system can identify the high priority calls ... and can attempt to setup the high priority calls;* and D8, column 5, lines 15 - 50: *When there is not sufficient capacity ... then logic 169 determines the priority value.*
- Claims 11, 24: Known from D1, see paragraph [50]. See also D6, section 3.

- Claims 12, 25: Known from D1, see paragraph [53]. See also D6, section 4.2.
- Claims 13, 26: It is a normal optimization measure in telecommunications to not forward data when there is no intention to use them later on.
- Claim 28: Implicit in D1.

Re Item VII

Certain defects in the international application

5 Document D1 is not acknowledged, Rule 5.1(a)(ii) PCT.

Re Item VIII

Certain observations on the international application

6 The claims are not clear, Art. 6 PCT.

6.1 The expression "prohibiting ... rejection" as used in **claims 1 and 14** is not clear as to its technical meaning. It is considered that prohibiting in an absolute sense is technically impossible; even when thresholds are used to reject a portion of the messages the remaining amount of resources may - e.g. due to a sudden surge in call attempts - be so high that some of them can not be processed and have to be rejected as well.

"Prohibiting ... rejection" thus has to be understood in a way less strict, i.e. measures are taken that aim at effectively reducing the probability for a message with a progress counter higher than a threshold to get rejected; or in other words, messages with a progress counter higher than a threshold are prioritized with respect to other messages.

Furthermore, it is also not clear in claim 1 what happens to messages in case the progress counter value is lower than the set threshold value. Whether those messages are in fact rejected or in which other manner they are (perhaps) treated differently from the messages with a counter above the threshold, remains unclear. Indeed, this doubt exacerbates the clarity issue related to the expression "prohibiting ... rejection".

6.2 As a consequence of the foregoing it is not even clear which technical effect the threshold would actually bring about.

6.3 The expression "transmitted across another node through an application server" is not clear in **claims 6 and 19**. Moreover, a route header is a data structure within a message and it is not clear how this can be part of a Call Session Control Function, which is a particular node type in the IMS network

architecture. Moreover, the term "route header" without a reference to a specific protocol, gives rise to a lack of clarity because the limitations intended by using the attribute "route" are unclear in this case.