

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

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| Applicant's or agent's file reference 15SGHW015PCT | FOR FURTHER ACTION | | See item 4 below |
| International application No. PCT/CN2015/080508 | International filing date (<i>day/month/year</i>) 01 June 2015 (01.06.2015) | 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 HUAWEI TECHNOLOGIES CO., LTD. | | | |

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| <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 7 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 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 type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <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 type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | |

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| | Date of issuance of this report 05 December 2017 (05.12.2017) |
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PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

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|-------------------------------------|-------------------|
| Date of mailing (day/month/year) | 03.02.2016 |
|-------------------------------------|-------------------|

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| Applicant's or agent's file reference 15SGHW015PCT | FOR FURTHER ACTION See paragraph 2 below |
|--------------------------------------------------------------|----------------------------------------------------|

| | | |
|-----------------------------------------------------------|-----------------------------------------------------------------|--------------------------------|
| International application No. PCT/CN2015/080508 | International filing date (day/month/year) 01.06.2015 | Priority date (day/month/year) |
|-----------------------------------------------------------|-----------------------------------------------------------------|--------------------------------|

International Patent Classification (IPC) or both national classification and IPC
H04L12/24 (2006.01) i, H04L29/06 (2006.01) i

Applicant
HUAWEI TECHNOLOGIES CO., LTD.

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 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

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will 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/CN | Date of completion of this opinion | Authorized officer |
| Facsimile No. | | Telephone No. |

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/080508

Box No. I Basis of this 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 43*bis*.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:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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|----------------------------------------------------|
| International application No. PCT/CN2015/080508 |
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|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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|-------------------------------|--------|------|-----|
| 1. Statement | | | |
| Novelty (N) | Claims | 1-28 | YES |
| | Claims | None | NO |
| Inventive step (IS) | Claims | 1-28 | YES |
| | Claims | None | NO |
| Industrial applicability (IA) | Claims | 1-28 | YES |
| | Claims | None | NO |

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|--------------------------------|--|
| 2. Citations and explanations: | |
|--------------------------------|--|

[1] Reference is made to the following documents:

[2] D1: CN 102378186 A;

[3] D2: CN 104253866 A;

[4] D3: WO 2015077460 A1;

[5] D4: WO 2004002085 A1;

[6] D5: Network Functions Virtualization (NFV); Architectural Framework.

[7] Novelty

[8] D1 discloses a base station resource sharing system and method, in which resources are dynamically allocated by means of resource pool sharing, so as to reduce network congestion. D2 discloses a software deployment method of a virtual network function network element. D3

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

discloses a method for allocating physical resources in a virtual transmission network. D4 discloses a control display method of a communication terminal, and identification information of the method relates to congestion of a wireless network service. D5 discloses an architectural framework of network functions virtualization. However, none of D1-D5 discloses the features in claims 1 and 15: "a capacity expansion request message carries a parameter for representing the size of resources required by the base station, and the capacity expansion request message is transmitted to a network function virtualization orchestrator (NFVO)"; furthermore, none of D1-D5 discloses the features in claims 6 and 20: "the capacity expansion request message is received, and the capacity expansion request message carries a resource parameter for representing the size of resources required by the base station which has congestion"; moreover, none of D1-D5 discloses the features in claims 12 and 26: "the capacity expansion message is transmitted to a virtual network function manager (VNFM), and the capacity expansion message carries the resource parameter for representing the size of the resources required by the base station". Accordingly, claims 1, 6, 12, 15, 20 and 26 having the above features are novel in the sense of PCT Article 33(2).

[9] Hence, dependent claims 2-5, 7-11, 13-14, 16-19, 21-25, and 27-28 are novel in the sense of PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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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

Article 33(2).

[10] Inventive Step

[11] It would not be obvious to a person skilled in the art to arrive at the technical solutions of claims 1-28 from any combination of D1-D5 and common general knowledge; therefore, claims 1-28 involve an inventive step in the sense of PCT Article 33(3).

[12] Industrial Applicability

[13] The technical solutions of claims 1-28 can be implemented in the field of communications, and claims 1-28 are industrially applicable in the sense of PCT Article 33(4).

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/080508

Box No. VII **Certain defects in the international application**

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

- [1] Claims 4-5, 9-11, 18-19 and 23-25 refer to multiple dependent claims, and do not comply with PCT Rule 6.4(a).