

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/US2018/053500

International filing date (day/month/year)
28.09.2018

Priority date (day/month/year)
29.09.2017

International Patent Classification (IPC) or both national classification and IPC
INV. H04L12/721

Applicant
FUTUREWEI TECHNOLOGIES, INC.

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

Authorized Officer

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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:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
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 forming part of 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>7, 9, 10, 17-19</u>
	No: Claims	<u>1-6, 8, 11-16, 20</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-20</u>
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations

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:
US2014/0280717 (Daniel C. Frost et al.) 18 September 2014
- 2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

D1 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses:

A computer-implemented method for processing data packets in a network, comprising:
receiving, at a receiver in a network device, a data flow including a data packet;
identifying, with one or more processors, multiple sub-blocks from a self-describing block header of the received data packet, wherein a sub-block contains one or more commands to be executed (D1, figure 2, "instruction portion" 240 contains a number of instructions and sets of instructions that each can be deemed to anticipate the "sub-blocks" of claim 1);

checking, with the one or more processors, at least one of (1) a serialization flag on a header of the sub-block (D1, "IP" 275, instruction pointer to instructions) **to determine whether a command in the sub-block may be processed concurrently with another command in another sub-block and (2) a serialization flag in the command in the sub-block to determine whether the command and another command in the sub-block may be processed concurrently;** (D1, [0018] and [0020] list a number of possible instructions that may be applied on the packet, some of which can be either done simultaneously or in sequence, however, the execution of the instructions is controlled by control portion 230, see [0022] with generated pointer values such as instruction pointer 275)
in response to the checking indicating that the command in the sub-block may be processed concurrently with another command in the sub-block or another command in another sub-block, the one or more processors distributing the command and the another command to

multiple processing resources for processing; and executing, with the one or more processors, the command and the another command in parallel via the multiple processing resources. (D1, [0024] "functional unit...contains logic which allows network node...to read and perform operations...in accordance with the instructions).

- 3 A similar reasoning as in point 2 above applies, mutatis mutandis, to the subject matter of independent claims 11 and 20 which therefore are also considered not new.
- 4 Dependent claims 2-10,12-19 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty (Claims 2-6,8,12-16) and/or inventive step (Claims 7,9,10,17,18,19), see:
- Claims 2,6,12,16: D1, [0022], scratch portion 250 where data necessary to carry out a specific instruction is located
 - Claims 3,13: D1, [0020] filter rules for firewall are example of command and conditions
 - Claims 4,5,14,15: D1, [0020]
 - Claims 7,9,10,17,18,19: obvious design option in the framework of D1 since use of global and shared parameters is known in programming languages and hence obvious in a dynamically programmed packet of D1 which uses conditions for certain actions. Use of TLV is also an obvious choice of parameter.
 - Claim 8: D1, figure 2, instruction pointer 275 and [0020] filter rules for firewall are example of command and conditions