

## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: JUDSON, David, H.  c/o Akamai Technologies, Inc. 145 Broadway Cambridge, MA 02142 USA		Date of mailing (day/month/year) <b>03 April 2020 (03.04.2020)</b>	
Applicant's or agent's file reference AKAM-360-PCT		<b>FOR FURTHER ACTION</b> See paragraph 2 below	
International application No. <b>PCT/US2019/063598</b>	International filing date (day/month/year) <b>27 November 2019 (27.11.2019)</b>	Priority date(day/month/year) 27 November 2018 (27.11.2018)	
International Patent Classification (IPC) or both national classification and IPC <b>H04L 9/06(2006.01)i, H04L 9/14(2006.01)i, H04L 9/32(2006.01)i, G06Q 20/06(2012.01)i, G06Q 20/36(2012.01)i, G06Q 20/38(2012.01)i</b>			
Applicant <b>AKAMAI TECHNOLOGIES, INC.</b>			

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 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/KR International Application Division Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea Facsimile No. +82-42-481-8578	Date of completion of this opinion  03 April 2020 (03.04.2020)	Authorized officer  BYUN, Sung Cheal  Telephone No. +82-42-481-8262
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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

**PCT/US2019/063598**

**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(b))
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 13*ter*.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 13*ter*.1(a)).
    - on paper or in the form of an image file (Rule 13*ter*.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:

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International application No.

**PCT/US2019/063598**

**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)	Claims	<u>1-14</u>	YES
	Claims	<u>NONE</u>	NO
Inventive step (IS)	Claims	<u>1-14</u>	YES
	Claims	<u>NONE</u>	NO
Industrial applicability (IA)	Claims	<u>1-14</u>	YES
	Claims	<u>NONE</u>	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: EMANUEL FERREIRA JESUS et al., 'A Survey of How to Use Blockchain to Secure Internet of Things and the Stalker Attack', Hindawi, Security and Communication Networks, Vol. 2018, Article ID 9675050, 08 April 2018

D2: US 2017-0344580 A1 (MASTERCARD INTERNATIONAL INCORPORATED) 30 November 2017

D3: US 2017-0323392 A1 (LANCE KASPER et al.) 09 November 2017

D4: WO 2017-162904 A1 (NOKIA TECHNOLOGIES OY) 28 September 2017

D5: WENTING LI et al., 'Securing Proof-of-Stake Blockchain Protocols', In: Data Privacy Management, Cryptocurrencies and Blockchain Technology; ESORICS 2017 International Workshops, DPM 2017 and CBT 2017, Oslo, Norway, September 14-15, 2017, pp. 297-315, September 2017

I. Novelty and Inventive Step (PCT Article 33(2) and 33(3))

1. Claims 1-13

The subject matter of claim 1 differs from these prior art documents in a method comprising mining individual segments of a block according to a confidence-based consensus algorithm using a transaction handling computing elements. And it is not obvious to a person skilled in the art by the documents, taken alone or in combination.

Claims 2-13 are dependent on claim 1.

Therefore, claims 1-13 meet the requirements of novelty and inventive step.

Continued on Supplemental Box

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of : Box No. V

2. Claim 14

The subject matter of claim 14 differs from these prior art documents in a method comprising mining individual segments of a data block according to a confidence-based consensus algorithm using a transaction handling computing elements when a quorum of the transaction handling computing elements sufficient to prevent a fork in the chain is not present. And it is not obvious to a person skilled in the art by the documents, taken alone or in combination.

Therefore, claim 14 meets the requirements of novelty and inventive step.

II. Industrial Applicability (PCT Article 33(4))

Claims 1-14 are industrially applicable.