

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 87206352PCT3	FOR FURTHER ACTION See item 4 below	
International application No. PCT/CN2022/072427	International filing date (<i>day/month/year</i>) 17 January 2022 (17.01.2022)	Priority date (<i>day/month/year</i>) 26 April 2021 (26.04.2021)
International Patent Classification (IPC) or national classification and IPC See relevant information in Form PCT/ISA/237		
Applicant HUAWEI CLOUD COMPUTING TECHNOLOGIES CO., LTD.		

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).
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

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.

3. This report contains indications relating to the following items:

<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 and industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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).

	Date of issuance of this report 24 October 2023 (24.10.2023)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Xiaofan Tang e-mail pct.team2@wipo.int

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCTWRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)**13 April 2022**

Applicant's or agent's file reference

87206352PCT3**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

PCT/CN2022/072427

International filing date (day/month/year)

17 January 2022

Priority date (day/month/year)

26 April 2021

International Patent Classification (IPC) or both national classification and IPC

G06F 11/14(2006.01)i; G06F 11/20(2006.01)i

Applicant

HUAWEI CLOUD COMPUTING 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 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/

Date of completion of this opinion

Authorized officer

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2022/072427

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:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/CN2022/072427

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

1. Statement

Novelty (N)	Claims	1-32	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-32	NO
Industrial applicability (IA)	Claims	1-32	YES
	Claims	None	NO

2. Citations and explanations:

[1] D1: CN 112527567 A (19 March 2021)

[2] D2: CN 102982085 A (20 March 2013)

[3] D1 discloses a system disaster recovery method, apparatus and device, and a storage medium (description, paragraphs [0020]-[0072]). A system 101 comprises a controller 1011, a cluster 1012, and a cluster 1013. The controller 1011 may send a control instruction to the cluster 1012 and the cluster 1013, so as to control the cluster 1012 and the cluster 1013 to execute various operations, for example, performing data synchronization. One of the cluster 1012 and the cluster 1013 is a main cluster, and the other is a backup cluster. The main cluster and the backup cluster can be converted in a certain condition, for example, when there is a fault in a cluster, the backup cluster can become a main cluster, and after recovery, the faulty cluster may become a backup cluster. The main cluster and the backup cluster may be two clusters with the same configuration. In order to ensure the normal provision of a service, clusters can synchronize data in real time therebetween, or back up data according to a preset rule. The system disaster recovery method is executed by the controller 1011. The method comprises: an execution subject sending a synchronization instruction to a backup cluster; after receiving the above-mentioned synchronization instruction, the backup cluster synchronizing data from a main cluster in real time; according to the number of available nodes in the main cluster, the number of nodes in the main cluster, and a preset proportion threshold, determining whether there is a fault in the main cluster; in response to determining that there is a fault in the main cluster, outputting first alarm information, controlling the backup cluster to stop synchronizing data from the main cluster, and determining whether the backup cluster is available; in response to determining that the backup cluster is available, acquiring address information of the backup cluster; modifying cluster configuration information according to the address information of the backup cluster; outputting the modified cluster configuration information to a user of the main cluster by means of a preset interface, such that the user uses the backup cluster according to the modified cluster configuration information; and in response to determining that the fault in the main cluster is recovered, controlling the main cluster to synchronize data from the backup cluster, wherein the synchronization may be incremental backup, so as to ensure the consistency of the data of the two clusters.

[4] The difference between claims 1 and 17 and D1 lies in: a control device controlling, according to a first data backup policy, a main cluster or a standby cluster to back up a plurality of data sets, which are in the main cluster at a first moment and are related to a first service, to the standby cluster, wherein the first data backup policy comprises information of the plurality of data sets, which are related to the first service, and the first moment.

[5] The differences between claim 13 and D1 lie in: an instruction comprising information of a plurality of data sets, which are related to a first service, and a first moment; and a main cluster backing, according to the instruction, up the plurality of data sets which are in the main cluster at the first moment and are related to the first service, to the standby cluster.

[6] D2 discloses a data migration system and method (description, paragraphs [0022]-[0050]). Service data, which needs to be migrated from a first data server cluster to a second data server cluster, is referred to as target data related to a service to be migrated. When data migration is prepared, first, a time point that has passed is selected to be referred to as a first time point for short, and then by means of an initial data

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2022/072427

Box No. V

Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability;
citations and explanations supporting such statement

import module, target data, which has been written into the first data server cluster at and before the first time point by an application server, is imported into the second data server.

- [7] It can be seen that D2 provides the motivation for the above-mentioned differences.
- [8] Some of the additional features of claims 2-12, 14-16 and 18-28 are disclosed in D1, and the remaining features are customary means in the art.
- [9] Therefore, claims 1-28 comply with PCT Article 33(2), but do not comply with PCT Article 33(3). Similarly, claims 29-32 comply with PCT Article 33(2), but do not comply with PCT Article 33(3).
- [10] Claims 1-32 comply with PCT Article 33(4).