

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 February 2009 (05.02.2009)

PCT

(10) International Publication Number
WO 2009/018063 A3

(51) International Patent Classification:
G06F 15/16 (2006.01) **G06F 12/00** (2006.01)

(74) Agent: COLLINS, Alik, K.; AKC Patents, 215 Grove Street, Newton, MA 02466 (US).

(21) International Application Number:
PCT/US2008/070955

(22) International Filing Date: 24 July 2008 (24.07.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/952,538 27 July 2007 (27.07.2007) US
12/177,976 23 July 2008 (23.07.2008) US

(71) Applicant (for all designated States except US): TWIN-STRATA, INC. [US/US]; One Apple Hill Drive, Suite 316, Natick, MA 01760 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,

[Continued on next page]

(71) Applicant and
(72) Inventor: BATES, John, W. [US/US]; 14 Asylum Street, Mendon, MA 01756 (US).

(54) Title: SYSTEM AND METHOD FOR REMOTE ASYNCHRONOUS DATA REPLICATION

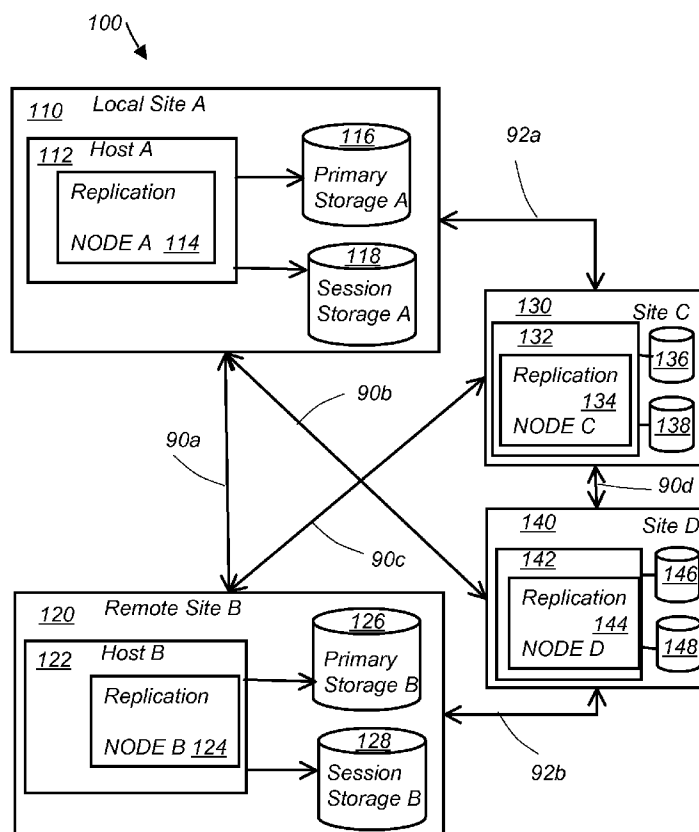


FIG. 2A

(57) Abstract: An asynchronous peer-to-peer data replication method implemented within a replication cluster comprising at least one master node and at least a first client node includes entering an update in a data volume of the master node and storing the update in a master node storage. Next, updating a first active session in a master log and then sending a first message from the master node to the first client node. The first message comprises a first message content and first "piggybacked" data indicating that the first active session in the master log was updated. Next, receiving the first message by the first client node, registering that the first active session in the master log was updated and signaling internally that the first active session in the master log was updated. Next, sending an update request from the first client node to the master node, processing the update request by the master node and sending the update to the first client node. Finally, receiving the update by the first client node and updating the first active session in a first client log.



NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

(88) Date of publication of the international search report:

16 April 2009

A. CLASSIFICATION OF SUBJECT MATTER**G06F 15/16(2006.01)i, G06F 12/00(2006.01)i**

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007 0162516 A1 (THIEL et al.) 12 July 2007 See abstract, Column [0004], [0021]-[0022] & Fig.3	1-27
A	US 6 928 577 B2 (MOSER et al.) 9 August 2005 See abstract, Column 12, Line 35 - 61 & Figs. 1, 5	1-27
A	US 2005 0044088 A1 (LINDSAY et al.) 24 February 2005 See Column [0004]-[0006] & Fig. 1	1-27
A	MING LI et al. 'FAULT-TOLERANT CLUSTER MANAGEMENT FOR RELIABLE HIGH-PERFORMANCE COMPUTING' In: Proceedings of the 13th International Conference on Parallel and Distributed Computing and Systems Anaheim, California, pp. 480-485, August 2001 See the whole document	1-27
A	Update propagation strategies to improve freshness in lazy master replicated databases. The VLDB Journal. February 2000, Volume 8, Numbers 3-4, pages 305-318, ISSN 1066-8888 See the whole document	1-27



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

18 FEBRUARY 2009 (18.02.2009)

Date of mailing of the international search report

19 FEBRUARY 2009 (19.02.2009)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu,
Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

YEO, Won Hyeon

Telephone No. 82-42-481-5696



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/070955Patent document
cited in search reportPublication
datePatent family
member(s)Publication
date

US 2007-162516 A1

12.07.2007

None

US 6928577 B2

09.08.2005

US 2004-0103342 A1

27.05.2004

US 2005-0044088 A1

24.02.2005

US 7287043 B2

23.10.2007